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# BULLETIN of the ATOMIC SCIENTISTS . . .

VOL. 2 AUGUST 1, 1946 Nos. 3 and 4


# A Victory and An Impending Crisis . . .

## THE McMAHON BILL BECOMES LAW

On August 1, the McMahon Bill, battered in the House but restored to almost its former self in the Senate-House conference, was signed by President Truman and became the law of the land.

The fight for legislation which would give the government that measure of control and supervision of atomic energy which is indispensable because of the tremendous implications of this force for good or evil, and which would at the same time safeguard that freedom of research and development necessary for vigorous scientific progress, began in October 1945, when an ill-advised attempt was made to rush through Congress the so-called May-Johnson bill. This Bill was a framework within which the Army could perpetuate the wartime set-up of the "Manhattan Project" and maintain for an indefinite time its tight grip on all work in nuclear physics.

The months-long hearings before the McMahon Committee had many disappointing moments, but slowly produced the desired result. Gradually, imperceptibly, even the most stubborn and reluctant of the senators on this Committee appreciated the novel "facts and implications" of atomic energy, and during the last week of the session they were defenders of reason and moderation against conferees on the House side, who had not benefited from a six months course in physical and political atomistics.

Thanks of the scientists go to Senator McMahon, the sponsor of the bill and untiring fighter for the principle of full civilian control of atomic energy. In the last stages of the controversy, the satisfactory outcome was largely due to Senator Vandenberg, whose authority with his Republican colleagues permitted the bill, authored by a Democrat, to be passed by unanimous consent of the Senate. When the initial attempt of Sen. Vandenberg to effect a "compromise" between civilian and military rule met with violent opposition, and was branded as a wedge to military domination, he immediately responded to this criticism by helping re-write the Military Liaison Committee clause in a form which satisfied the responsible Army leaders and, which, at the same time, left no doubt that all policy decisions are to remain in the hands of a civilian Atomic Energy Commission.

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The vigorous support of the cause of civilian control by American public opinion, which found its expression in the creation of "Committees for Civilian Control of Atomic Energy" in several cities largely contributed to the final passage of the McMahon bill. The many distinguished men and women who have devoted themselves to this cause, well deserve of American science, liberty and security.

However, this successful mobilization of American opinion against Army rule in science, is cause not only for rejoicing but also for serious thought. To a large extent, this rallying has been possible only because the American public has not yet become as alarmed with the prospects of atomic war as the facts warrant. The public—liberal and conservative alike—was ready to support us because the apprehension of a possible atomic attack on our cities, had not not yet engulfed its traditional beliefs in civil liberties and human rights. Atomic bombing still appears to most Americans as a Wellsian fantasy, despite the magazine articles and radio plays which have depicted such attacks in many gruesome details.

It is easy to predict that the mass-psychological reaction to a growing feeling of danger and insecurity—a development which will be inevitable if the armaments race is permitted to gain momentum—will be the gradual muffling of the voices of the defenders of civil liberty and democratic freedoms, and a rising clamor for vigorous police action and military leadership of the country. Since economic planning, medical preparedness, biological research and many other fields of activity are as vital for survival in the next war, as are atomic bombs and rockets, all these fields are likely to be drawn into the sphere of narrow military supervision and all threads of international cooperation may be cut. If it is treason, punishable by death, to reveal the number of neutrons released in the fission of plutonium, there is logic in expecting that, in a few years, it will be considered treasonable to reveal a cure against botulism, or the blueprint for a new city development.

Does this mean that scientists should stop "frightening the people," and cease emphasizing the dangers to American security implied in an atomic armaments race? The answer is that we would not be scientists if we were to refuse to recognize, and to state the truth as we see it. As scientists, we cannot but put our faith in the general recognition of truth and consequent intelligent action.

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## THE UN ATOMIC ENERGY COMMISSION IN DIFFICULTIES

The danger that all gains achieved with the passage of the McMahon bill may be rendered illusory by a general tide of militarism and nationalism, arising from an atomic armament race, is made particularly ominous by the apparent deadlock in the deliberations of the United Nations Atomic Energy Commission.

Some delegates—notably the French and the Dutch — attempted to postpone the discussion of the legal status of the proposed International Atomic Energy Authority and of its relation to the Security Council, particularly in the field of enforcement and sanctions, until an area of agreement on the desirable forms of international control was first established.

*(Continued on last page)*

# The UN Atomic Energy Commission . . .

The deliberations of the UN Atomic Energy Commission up-to-date (August 1) can be divided into three stages—(1) a series of plenary sessions in which the chief representatives of all twelve member nations delivered more or less elaborate declarations; (2) a series of meetings of the so-called "Sub-Committee 1," later superseded by "Committee No. 2" which was essentially devoted to the discussion of the Baruch plan, particularly in its relation to the present UN structure; and (3) the most recent meetings of the "Committee No. 2," devoted to the discussion of the Soviet proposal.

## FIRST STAGE—PLENARY SESSIONS

The first two meetings of the full Commission, highlighted by the speeches of Bernard Baruch (U.S.A.) and Mr. Gromyko (U.S.S.R.) took place on June 14 and 19 respectively and were reported in the last issue of the Bulletin. In the third full session, on June 25, the round of policy declarations was completed. The main speeches of this session were those of Mr. Parodi (France), Dr. Lange (Poland) and Dr. Evatt (Australia). Following are pertinent quotations from these speeches:

A. PARODI (FRANCE): "I would like to point out the extent to which France has participated in atomic research. There is in France a long tradition of scientific study on these questions; an ancient tradition because it originates from the first discovery relating to radioactivity; and a constant tradition since at the beginning of 1939 French scientists brought decisive contributions to the work which led to the conquest of atomic energy."

"As soon as victory permitted France to end her war effort, she has given to the work of her research scientists a new impulse and a new direction. She has established a commissariat for atomic energy, whose task it is to study, and apply industrially, procedures for the utilization of forces liberated by the disintegration of matter. The necessary legislation has been passed to give this organization an absolute monopoly in this field. A plan for prospecting and for using the resources of radio-active substances has been taken up throughout the whole of French territory. We are now achieving our first concrete progress in the technical field and, in particular, in the construction of experimental apparatus and the industrial treatment of radioactive minerals."

"Finally, the French Government is now organizing a great institution for research in nuclear physics, pure and applied, and the most eminent scientists of my country are collaborating in the institution. An essential characteristic marks these studies, these plans and these achievements. It is that they are all directed entirely towards peace, towards the works of peace, towards activities whose essential object is the good of humanity."

"I am authorized to say that the aims which the French Government has assigned to the research work of its scientists and of its technicians, are absolutely pacific. Our wish is that all nations of the world should do the same as early as possible, and for this purpose my country will eagerly submit to the rules which may be judged the best, as soon as these rules are adopted by the United Nations, to ensure throughout the world the control of atomic energy."

"Two plans coming from two nations which are at present the most powerful in the world have been submitted for our consideration."

"Let us consider with all the attention that they merit, the proposals which have been submitted to us. The first of these has been submitted in the name of the United States by Mr. Bernard Baruch. The great American Nation has a primary responsibility in the matter which we are studying, because it is the United States which first succeeded in freeing atomic energy and which has perfected the weapon, which is derived from this discovery, because she alone has used this weapon, and because, at the present time, she is the only country, as far as our information goes, which possesses this weapon. The American Government is fully aware of this responsibility, and I would thank the American Government in the name of the French Government for having taken account of this fact in the plan which it has laid before us."

**"The French Delegation wishes to say that it considers this plan as the most generous and the most broadminded plan** which could be proposed to the Commission at the beginning of its meetings by the country which is the only country capable, at the present time, of manufacturing the atomic weapon and the only country which is in possession of reserves of this weapon."

"We have, now that the Delegate of the Soviet Government has made his statement, another element of capital importance that we must take into account for the future ordering of our discussions. The plan presented in the name of his Government by Mr. Gromyko is, like the American plan, aimed at proposing the most appropriate means to spare humanity the ravages which a new conflict would cause through the employment of atomic arms."

"The means that are proposed as conceived by the Soviet Government are in part different from those suggested by the American Government. But after the first examination, it would appear that on those points on which the plans are not in perfect accordance, they are nevertheless not irreconcilable. The views which dictated both plans, the primary interest which exists for both the powers concerned as well as for other powers, are that an agreement mutually and generally satisfactory, should be reached on the matter, and the many common points, apparent or implicit, which characterized the two groups of suggestions, give us the hope that it will be possible to put these two plans into harmony."

"The chief characteristic of the proposition that the Soviet Declaration brings us, is its legal character. Independently of the proposal as to methods of work, it consists essentially of traditional diplomatic solutions, such as a draft international convention to forbid the employment of atomic arms. This indispensable element of a general system for the solution of this great problem may be generally accepted, since the President of the American Delegation spoke in so many words of an adequate regulation of atomic energy, including the renunciation of the atomic bomb as a weapon.

**"But like the American Delegation, the French Deleagtion considers that a convention eliminating the atomic arm should include not only, as Mr. Gromyko has emphasized quite rightly, the characteristic of a solemn engagement, but it should also be insured that its strict application is absolutely guaranteed."**

"In this entirely new field, in view of the scope and the sudden character of the atomic bomb, not only no violation but no possibility, no suspicion of violation, can be tolerated. This means that the notion of supervision and guarantee of observance are inseparable in the convention itself."

"The Soviet Plan provided expressly for this, and recommends that the organization for supervision should be one of the subjects to be studied by the Committees whose establishment the Plan envisages. It appears, then, that we are all in agreement upon a certain number of prinicples. The atomic bomb must be eliminated. The obligation which our governments shall take upon ourselves for this purpose, shall be applied under supervision. Effective sanctions shall be applied to anyone violating these obligations. It is as regards the relative importance to be attached to these various principles, and above all the order in which their application must be effected, that divergencies of view appear between the two plans presented to us at the present state. These divergencies are certainly such that

a sincere desire to succeed should be capable of removing them."

"The nature of the problem itself imposes upon us the necessity of dealing with this subject and also the inequality which reigns today among the nations from the point of view of knowledge of the production and of the use of raw materials, energy, and atomic bombs. **We should run the risk of compromising the success of our work if we were to demand at the outset from any country that it should place before the public, at a sole stroke, the results of several years of prodigious, technical, and industrial effort without receiving in return guarantees involving the adoption of an effective system of international control. An equal risk would be run, were we to demand that other countries should themselves make the first step in placing their resources in raw materials under international control. It would be too much to demand this without supplying them with information as to the manner in which these materials should be treated. It is thus, through a wise arrangement of the steps into which our task is to be divided, that we shall find the solution of the problem confided to us."**

"Let us remember that the outlawry of the atomic bomb is only one of the elements of this highly important idea, this indivisible conception of security. Let us remember that the statesmen will not have carried out their duty toward the nations until they have assured complete security."

"Mr. President, the world needs light. Let us hasten to provide this light. Only at this price can we give humanity peace and salvation."

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*The speech of Mr. Parodi indicated the desire of the French delegation to find a compromise between the American and the Soviet proposals. The French made clear in this and subsequent declarations that they would not surrender the American principle of effective international control, but that they were inclined to meet the USSR in the matter of the veto and of the subordination of the Atomic Control Authority to the Security Council.*

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DR. LANGE (POLAND): "At the meeting of the General Assembly in London on January 24, 1946, the Vice Minister of Foreign Affairs of the Republic of Poland, Mr. Modzelewski, brought forward certain proposals:"

'As it is agreed that the United Nations must take measures to preserve the present and the future generations against the use of atomic energy and other scientific discoveries for mass destruction and as one of the most effective measures to this end can be taken through the parliaments of the States members, we suggest that the Assembly should recommend to the Delegations here that their parliaments should adopt laws embodying the following principles:

1. 'That States should exchange between each other all discoveries of a scientific character such as that of atomic energy.
2. 'That the results obtained in his scientific field should be used only for the benefits of humanity and not for its destruction.
3. **'That the member States should support the United Nations Organization in its efforts to control and supervise the use of atomic energy for peace.**
4. **'That members of the United Nations undertake to eliminate atomic arms and other arms for mass destruction from their national armaments.**

"I am very glad to find that the basic ideas of these proposals are contained in the statements made both by the representatives of the United States and of the Soviet Union, but the world needs quick action. The threat of atomic warfare is hanging over the peoples of the world like a heavy cloud. It poisons international relations and may even today be considered as seriously endangering the mutual confidence, and consequently also the peaceful relations among nations. The discovery of the atomic bomb has become a source of mistrust between nations, a source which must be removed as quickly as possible."

"We have been discussing he technical and economic problems concerning the production of fissionable material, of control of plants, of strategic distribution of raw material and plants. This is all important and interesting, but it is not the most important thing. **In order to restore confidence among nations the peoples of the world must know one thing. They must know that atomic bombs are no longer being produced.** The peoples of the world want to be reassured that what happened in Hiroshima and Nagasaki and what now is going to be demonstrated in Bikini will never be repeated at any place of the globe. Without this knowledge, without this reassurance there will be no confidence among nations, and in the long run, there will be no peace."

"In connection with this problem I should like to point out to you that we have had in recent history other kinds of weapons considered incompatible with the ethical ideas of our culture and civilization. Such weapons are gases and certain liquids. Their use for purposes of warfare has been eliminated by the Geneva Protocol of June 17, 1925, and the conscience of the civilized world felt so strongly about it that even in the last war, the most destructive of all, these weapons were not used. The successful record of the Geneva Protocol points the way toward the elimination of atomic energy as a means of warfare. Without prejudice to long range plans like that proposed by the United States, the representative of Poland wants to urge this Commission to adopt immediately measures leading to the outlawing of atomic warfare. The proposal of such measures has been laid before us by the representative of the Soviet Union."

"This representative has proposed a draft convention aiming at the immediate outlawing of the "production, storage and use of weapons based upon atomic energy" and also for the immediate destruction of all such weapons in whatever part of the world they may be. The draft convention proposed by him provides also for means of individual punishment for violators of this convention."

"In the name of the government of Poland, I want to give my full support to the draft convention proposed. It contains all the basic ideas which were brought forward in the name of our government by Mr. Modzelewski at the January meeting of the General Assembly."

"After the completion of this first step of our program—namely, the outlawing of atomic warfare and the destruction of the means of such warfare—we can proceed toward further steps. Such steps are: (a) the exchange of scientific information (b) the development of a system of international control and inspection which will secure the exclusive use of atomic energy for the aforesaid peaceful purposes. At this stage we also may consider the problem of **international sanctions which should gradually supplement the internal control and sanctions proposed by the Representative of the Soviet Union."**

"To those, however, who do believe that they can profit from the martial use of atomic energy for their own narrow and selfish purposes, I should like to direct one word of warning. There was a group of people who thought that they could dominate the world through the ruthless use of the most advanced means of destruction, of which they had a temporary monopoly. They thought that by quick lightning warfare they could achieve their ends. . . Today Adolf Hitler is dead but Poland is very much alive. Others are being tried at Nuremburg. No temporary advantage, by whomever held, will prevail against the will of the people to preserve their freedom and against the conscience of mankind."

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*Mr. Lange seconded the Russian proposal as a first step, but was more explicit than Mr. Gromyko in acknowledging the necessity of effective international control and international sanctions against violators as a second step. Whether un-*

*knowingly or prompted by political considerations, he adopted Gromyko's unrealistic attitude in overestimating the importance of "making atomic bombs" and ignoring the fact that the* production of fissionable materials, *whether for war or peace, is the crux of the matter.*

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Dr. VAN KLEFFENS (THE NETHERLANDS): "Two plans which fortunately seem by no means incompatible have been laid before us: the American plan, bold, realistic, and imaginative, has as yet only been presented in outline; Russian ideas, following more traditional lines and with a different emphasis, have been presented with somewhat greater precision. The Netherlands Government is studying both plans with all the attention and sympathy they both deserve."

"I am sure, however, that we should begin working on a specific draft as soon as possible. If we continue too long with a general discussion, indispensable as, no doubt, this is, I fear that avoidable misunderstandings may easily arise, or we might find ourselves talking at cross-purposes with no benefit for anybody, and least of all to the attainment of our high purposes."

"I think any committee to be established should in the first instance limit itself chiefly, if not entirely, to the positive and constructive side of the question. What I mean is this; **if we start discussions now, right at the beginning, on questions of veto or of penalization, we might get into very serious difficulties for which there is perhaps no need.** It seems to me that these questions should be taken up afterwards, that is, once we are much clearer in our minds as to the sort of plan we wish to see carried into effect. I am convinced that these thorny subjects would then be much easier to deal with—difficult as, of course, they must remain, than at the present stage of our labors.

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DR. EVATT (AUSTRALIA): "In our view, the highly complex problem which confronts us must be considered as a whole. From this point of view, the plan submitted by Mr. Baruch offers a sound basis for planning. The Australian Government is in general agreement with the proposal of Mr. Baruch that, as part of a single plan, an international authority be established, for the purpose of preventing the misuse of atomic energy and ensuring its use for the purpose of promoting the general welfare of mankind."

"Mr. Gromyko has suggested the study of a draft international agreement forbidding the manufacture and use of atomic weapons, to be followed by other measures involving strict supervision and control to see that the terms of the agreements are strictly observed. **Mr. Gromyko's proposals, however, do not, in my view, give sufficient recognition to the essential interrelation between all the various parts of the one great problem."**

"It was with a conviction of the urgency of this single problem that the Assembly instructed this Commission to proceed, 'with the utmost despatch'. Now, this urgency is based on both negative and positive reasons. Negatively, atomic energy is such a danger to humanity that it must be lessened and then removed. Positively, atomic energy can be such a boon to humanity that we must not delay in releasing its beneficial forces."

"If there is long delay in solving the international aspects of the problem, scientists in one country or another may discover new and revolutionary processes for the release of atomic energy."

"Delay may also lead nations to build stockpiles of fissionable materials for atomic bombs with the result that required material will not be available for the production and use of atomic energy for industrial and scientific purposes."

"Long delay may even endanger the United Nations Organization itself, for delay may arouse the suspicion of the peoples of the world that the powers will produce atomic weapons because they are incompetent to agree upon a means for just and equitable control."

"It is inevitable that in the first instance any nation will be inclined to approach the problem of atomic energy from the point of view of its own security and welfare. World security and world welfare cannot be successfully promoted if we fail to recognize this tendency. Each nation will wish to avoid the use against itself of the devastating weapons which the release of atomic energy makes possible. Each nation will seek to enjoy as soon as possible the benefits which atomic energy can bring, in scientific development, in the art of medicine and as a source of industrial power."

"It is to be expected that countries which are relatively poor in existing power resources, and particularly those countries which also possess significant deposits of uranium ores and thorium concentrates, should be concerned with the possibility of rapid application of nuclear energy for the production of industrial power. There are nations whose industries may decline in the absence of an alternative to coal as a source of power, and to such countries even the terrors of atomic warfare may often appear more remote than a dwindling economy or decreasing standards of living. There are other countries where supplies of power not involving the transport of large quantities of coal or the building of long electrical transmission lines would open upon new areas of agricultural or mineral development. Abundant power at reasonable cost is the lifeblood of modern industry. Power from atomic energy may enable modern communities to flourish in regions remote from existing sources of power. Such nations, for whom the peaceful uses of atomic energy are of more immediate importance will be likely to demand access at the earliest possible moment to such materials and information as may be necessary for them to develop atomic energy for peaceful purposes."

"These considerations should all be borne in mind when the timetable for the World Development Authority, the exchange of information and the imposition of controls and sanctions are being discussed and planned."

"I have already mentioned the special interest of those countries which possess within their territories deposits of uranium and thorium and who are thus able to make an important contribution as suppliers of raw materials. One should not be surprised if some such countries are reluctant to accept control of their product by any international authority unless controls are also accepted by those countries possessing plants for the production of fissionable materials. Therefore, while control of mining operations and of the raw materials extracted from the ores may well form an essential basis of international control system, that system will also have to provide for disclosure of scientific and technical information and for the cessation of production of atomic weapons, on terms and conditions to be agreed upon and defined. All this illustrates the necessity of an international agreement which will, in the one instrument, define the obligations to be accepted by the parties to the instrument and establish an atomic energy authority through which those obligations can be made effective."

**"The Australian Government agrees in establishment of an international authority to act as the organ of the United Nations in the field of atomic energy.** The exact relation of such an authority with the United Nations will require detailed consideration. One question of this character which was referred to by Mr. Baruch is the application of the so-called veto. It is essential that the precise nature of this special privilege should be clearly understood."

"At present, the veto power relates solely to a particular method of voting in reaching decisions of the Security Council on matters of substance as distinct from procedure. If any one of the five permanent members of the Security Council chooses to do so it can block a

decision of the agreed majority (7) of the Council membership of eleven. Thus the so-caled "veto" can be only exercised in the course of voting in the body of the Security Council by a permanent member in order to prevent a vote by seven members of the Council from becoming effective. **It is quite erroneous to apply the term "right of veto" to decisions of the United Nations generally because it is only in relation to one of its organs that the right has been conferred. That right applies solely to the special circumstances of the operations of the Security Council and the possession of such a right in the Council does not give any claim to a similar veto in respect of the operation of any other international authority.'**

"To some extent the recommendations of this Commission wil require review by the Security Council. In such review the veto may be exercisable according to the circumstances, that is to say, whether the matter is one of procedure or substance. **In this Commission of twelve, no veto is exercisable unless we decide to introduce it which, so far as I know, is not even contemplated. When the Assembly of the United Nations deals with the welfare aspects of atomic energy, again no veto is exercisable. If in the end an international convention establishes a world atomic authority, the day-to-day administrative decisions of that body may or may not be subject to the veto system of voting. That is a matter for the consideration of this Commission when it is reviewing the problem as a whole."**

"However, I think I should add that, in my view, nothing has been disclosed regarding the nature of atomic energy or of the posssible functions of the proposed international authority on atomic energy to indicate why any particular nation or nations should be accorded the right of veto over the decisions of the agreed majority of the Authority."

"It would appear that one immediate task before us is to consider the drawing up of a first draft, of the heads of an international instrument. I believe that from the statements which have been made before this Commission it is possible for a working committee, composed of representatives of each of the members of this Commission to prepare a first draft of the main principles of a charter for a world authority to control and develop atomic energy. The Committee would of course have before it not only Mr. Baruch's statement in opening, but also the observations, criticisms and suggestions which have been made by the other eleven members of the Commission."

"The people of the world are following the proceedings of this Commission with great anxiety and concern. They are looking to us for prompt action. They will not not be satisfied with expressions of mere hopes and aspirations. They are demanding a plan which will at once remove a great fear from their hearts and bring them closer to the benefits that scientists and technicians of this age can and will make available from the bountiful forces of nature."

*Mr. Evatt's arguments largely coincide with the attitude presented in the editorial in the July 1 issue of the Bulletin; he, too stresses that the essential aspect of the veto problem in relation to the control of atomic energy is that no veto power shall hamper the day-to-day operations of the proposed international authority. Questions of major violations and sanctions belong to the jurisdiction of the Security Council, in which the veto power for questions of substance is provided by the present UN constitution and cannot be abolished exclusively for the discussion of conflicts arising from applications of atomic energy.*

After the course of speeches was com peted with the declaration of Mr. Evatt, the American delegation prepared a chart listing 20 points raised by Baruch's declaration, and classified the attitudes of the twelve member nations to these proposals. Essentially, the "Baruch Chart" showed agreement of the majority of the nations to most American proposals, with the following important exceptions:

**USSR:** "No" to abolition of veto and to "any effort to undermine the Security Council".

"Perhaps later after discussions in a sub-committee to be set up"—to all proposals of control and inspections.

**Poland:** "Eventually" to all control and inspection proposals.

To this it must be added that **France** and **Holland** advocated postponement of arguments about veto and sanctions, and urged the discussion of the control scheme first.

After July 1, the commission as a whole met only twice in brief sessions— on July 3 to approve the Rules of Procedure and on July 18 to elect a new Chairman. The Rules of Procedure were then unanimously adopted, sent to, and confirmed by the Security Council.

The new chairman of the Commission, elected to replace Mr. Evatt of Australia, who was leaving for Paris, is Capt. Silva of Brazil (the chairmanship being rotated in the alphabetical order of the countries represented).

On June 28, a Working Committee of the full committee was established which included one delegate from each of the twelve nations.

## SECOND STAGE—COMMITTEE DISCUSSION OF AMERICAN PROPOSALS

Baruch's summary chart, referred to above, provided the starting point for the deliberations of the "Sub-Committee 1" established by the Working Comittee of the whole Commission on June 28 and consisting of the representatives of France, Mexico, Great Britain, United States, USSR, and Australia. The terms of reference of this Sub-Committee were "to study all proposals put forward and to prepare the framework of a possible plan by presenting to the Working Committee a list of headings of topics to be considered."

Although Mr. Gromyko insisted that the terms of reference should refer to all proposals and not only to the Baruch plan, it seems that the discussion in the Sub-Committee dealt mainly with the American concept of an Atomic Development Authority and immediately concentrated on the very problems—the relation of the ADA to the Security Council and its discretionary powers—that the French and Dutch delegates wished to postpone in order to avoid "unnecessary disagreements."

No complete transcripts of the Committee meetings have been published; the following report is based mainly on the memoranda presented by the individual members.

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Sub-Committee 1 began its work on July 1 with an outline of six topics to be discussed, presented by its chairman, Dr. Evatt.

### TENTATIVE PROPOSALS BY CHAIRMAN OF THE ATOMIC ENERGY COMMISSION—DR. H. V. EVATT (AUSTRALIA)

In order to explore the possibility of making recommendations covering all the main aspects of the problem as discussed in the Commission, the following general principles should be examined:

**1. There should be a single international instrument embodying (a) a comprehensive plan for the international control and development of atomic energy; (b) the establishment of an international atomic energy authority to administer and carry out the plan and to be vested with wide discretionary powers; (c) that, as part of the plan, there should be undertakings by member nations not to use atomic energy for purposes of war; and (d) that the several parts of the plan shall come into effective operation under terms and conditions which are just and equitable, having regard to the over-riding purposes of the plan.**

2. That, for the purposes of carrying out the plan, the international authority should be vested with all necessary rights in the relevant raw materials, processes, plants and the products of plants.

3. That an effective system should be established for preventing breaches of the agreed restrictions and controls.

4. That the international authority shall be required to promote and carry out plans for the development of atomic energy for peaceful purposes.

5. That scientific information on nuclear processes and their application to peaceful purposes should be exchanged, care being taken at each stage not to prejudice the effectiveness of the agreed safeguards against misuse. Such exchange of information should take place by interchange of personnel and through open publication.

6. That the general plan should provide that, at times and under conditions to be fixed by the international authority, the manufacture of atomic bombs should cease and all existing bombs should be dismantled.

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Also on July 1, the following "Point of View" was presented by Prof. Joliot-Curie on behalf of the French delegation. The emphasis is on the subordination of the ADA to the Security Council—a concession to the Russian desire to leave the power of the Council unimpaired.

### (2) POINT OF VIEW OF THE FRENCH

1. CONVENTION AND CONTROL.

(a) The ideas of supervision and guarantees are inseparable from the Convention.

(b) The Convention would become effective at the stages and in the manner provided by the Treaty.

2. AUTHORITY OF CONTROL.

(a) There should exist a special international controlling Authority to be established by the General Assembly.

**(b) The Authority should report to the Security Council on its controlling and administrative activities and should notify the Council of all breaches of rules which it would have been able to detect.**

**(c) The Authority should be the necessary technical Counsel to the Security Council.** The Security Council should refer to the Authority, for advice, all questions placed before it, on matters bearing on development or control of atomic energy.

**(d) The Security Council should be the only authority responsible for decision taken in the interest of peace and for the security of the United Nations.**

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On July 2 and July 5 two memoranda were submitted to the Sub-Committee by Mr. Eberstadt on behalf of the U. S. delegation. The first consisted of an outline of a treaty embodying the establishment of the ADA, provisions for the enforcement and punishment of violations, and several additional topics. Following are the salient points of this memorandum:

### (3) EXCERPTS FROM MEMORANDUM NO. 1 SUBMITTED BY THE U. S.

The **preamble** of the treaty should express the following principles:

1. The preservation of international peace and security in accordance with the Preamble and Chapter I of the Charter of the United Nations;

2. The safeguarding of all peoples against the use of atomic weapons;

3. The development and wide distribution of atomic energy and its by-products for purposes of raising the welfare and standard of life of the peoples of the world and of contributing to their science and culture; and

4. The realization of these ends through international co-operation, through an international agency, for the development and control of atomic energy, and through a system of international enforcement.

The treaty should contain provisions:

1. Defining the relations between the Authority and the Security Council, the General Assembly, the International Court of Justice, and the other organs of the United Nations;

2. Defining the mutual rights and obligations of the several signatory States and the Authority, including the relations between the Authority and any atomic energy control agencies of the signatory States;

3. Governing the sequence and timing of the steps in the transition from the present conditions to the conditions which will prevail once the Authority is in effective control of atomic energy;

4. Specifying the time when and the conditions under which the national and private possession, manufacture, and use of atomic weapons shall be outlawed;

5. Defining the violations which shall constitute international crimes and specifying the sanctions to be employed for such violations;

6. Relating the signature, ratification, entry into force and amendment of the treaty; and

7. Concerning any necessary amendment of the charter of the United Nations.

**The charter of the Atomic Development Authority** should state the following purposes of the Authority:

**1.To prevent the possession, manufacture or use of atomic weapons for mass destruction;**

**2. To foster the beneficial, non-dangerous uses of atomic energy;**

**3. To have managerial control or ownership of all atomic energy activities potentially dangerous to world security;**

**4. To control, inspect, and license all other atomic energy activities;**

**5. To engage in atomic energy research and development;** and

6. To assure that the benefits derived from such research and development shall be available to the peoples of all the signatory States so long as each State and its people support the Authority and observe their obligations under the treaty and charter.

The memorandum proceeds to enumerate the powers of the proposed Authority following closely the suggestions of the Acheson-Lilienthal report (**see Bulletin** V. 1 No. 8, and the article by J. R. Oppenheimer in V. 1 No. 12.).

**Provisions for enforcement** should be included in the treaty as follows:

1. Definitions of conduct constituting violations.

2. Consequences of such violations, including the procedures to be followed in detecting, establishing, remedying or punishing such violations:

(a) Administrative action by the Authority.

(1) Special investigations.

(2) Revocation or denial of licenses.

(3) Other action.

(b) Resort to judicial processes and procedures.

(c) Reference of serious violations to the Security Council of the United Nations.

Among the **additional topics** to be provided for in the treaty are:

Legal capacity and privileges and immunities of the Authority in the territory of each signatory State.

Privileges and immunities of officials of the Authority.

Financial provisions, and

Measures to insure adequate protection and strategic location of the premises and property of the Authority.

Consideration of the charter first would afford an understanding of the functions to be performed by the Authority and would facilitate agreement upon the other provisions of the treaty.

* * *

The second American memorandum contained an even more detailed description of the powers and functions of the Atomic Development Authority. Here again, the proposals of the Acheson-Lilienthal report were followed. One may say that with the presentation of this memorandum, the Acheson-Lilienthal ADA-scheme, for the first time, was acknowledged as the official American plan of dealing with atomic energy problems (since the original Baruch speech was restricted to the enunciation of general principles). Because of the length of the memorandum and its close similarity to the Acheson-Lilienthal report, we will not attempt to print its content here, but will

merely quote some of the final paragraphs, which touch upon the topic not considered in the Acheson-Lilienthal report—the relation of the ADA to the UNO.

### (4) EXCERPTS FROM MEMORANDUM NO. 2 SUBMITTED BY THE U. S.

Part 7. The exercise by the Authority of the controls referred to above will call for a wide variety of administrative decisions based upon fair, sound and responsible judgments. In suggesting the conferring of these powers upon the Authority, it is not intended that their exercise by the Authority should be absolute, unlimited and free from review. Obviously, as to certain specific fields and functions to be defined in the treaty, the Authority's decisions would be final. In others they would not. It is our intention in dealing with the relation of the Authority to other elements of the United Nations to treat this phase of the subject more fully, and also to present proposals for enforcement of the provisions of the Treaty and Charter as well as for sanctions for violations.

Part 8. As a function of its control operations, the Authority should make provision for the rendering of frequent and detailed reports to the appropriate organs of the United Nations and to the constituent nations, embodying the results of its researches, new discoveries in the atomic field, the level of its material stockpiles, new locations of ores and all other important and pertinent information.

In addition, properly accredited representatives of the United Nations and of the constituent nations should be permitted, under suitable regulations, to inspect the plants, properties, records and operations of the Authority.

* * *

As mentioned above, the relation of the ADA to the other UN organs had become the main subject of controversy in the Committee. The following memorandum dealt with this subject.

### (5) EXCERPTS FROM MEMORANDUM NO. 3 SUBMITTED BY THE U. S.

The nature of the relations of the Atomic Development Authority with the various organs of the United Nations obviously will depend upon the powers and functions which the Authority receives and upon its statutes within the framework of the United Nations. Once these are made clear, the problems involved in the adjustment of the Authority to the organizational structure of the United Nations become clear and can be solved.

Three general considerations appear at the outset.

1. The first arises from the fact that the question of control and development of atomic energy was neither considered nor dealt with in the framing of the Charter of the United Nations. This circumstance, however, should not be permitted to prevent bringing within the framework of their charter a matter of such vital common concern to the members of the United Nations. On the contrary, if the Charter is to survive, it must be susceptible of adaptation to meet new needs dictated new conditions. The control and development of atomic energy, therefore, should not lead to the formation of an international agency unrelated to, or outside of, the United Nations, but rather to one fashioned in sound relationship to the Charter and to the organs thereby created.

2. Secondly, none of the existing organs of the United Nations possesses the managerial, proprietary, inspecting, and licensing powers necessary to effective international control and development of atomic energy. A new agency therefore is necessary. Moreover, even if the Charter could be construed to provide for a subsidiary organ created by collective action of several of the existing organs and possessing an aggregate of power delegated by each of them, such subsidiary organ would not have adequate powers under the Charter. Accordingly, the Authority, as a new organ, should be established by treaty granting it all necessary powers and defining its relation with the existing organs of the United Nations.

3. The third general consideration concerns the degree of autonomy of the Authority. Having in mind the essentially non-political character of the Authority, the presumably high caliber of its personnel, and the necessity for wide discretion on its part in order to achieve its purposes of control and development, great weight and a considerable degree of finality should be given to its determinations, orders and practices. Where their consideration is required by another organ, they should be accepted unless clearly erroneous or beyond the scope of the Authority's powers.

Three categories of decisions may be mentioned. They will, of course, need careful definition. In general they are (1) Administrative matters on which the decisions of the Authority are final; (2) Decisions on other matters not of sufficient gravity to constitute a threat to the peace. These might be subject to review, possibly by a board established for this purpose. Its decisions, in turn, should be enforced by the Security Council as procedural matters, for, regardless of the original seriousness of the offense, failure to respond to the proper orders of the Authority creates a situation demanding the attention of the Security Council. (3) Serious offenses constituting a threat to the peace. These, as hereinafter outlined, fall within the jurisdiction of the Security Council and the provision of Article 51 of the Charter.

One further comment is in order before taking up in detail the relation of the Authority to the organs of the United Nations. Article 2, paragraph 7 of the Charter will not be infringed by the Authority. This paragraph is confined to matters "esssentially within the domestic jurisdiction of any state". Specific recognition in the treaty that control of atomic energy cannot be essentially domestic but rather predominantly international would be sufficient to render this paragraph inapplicable.

The respective functions of the Authority and of the organs of the United Nations, when viewed in the light of the foregoing considerations, indicate the general relationships which should prevail. They are outlined in the following paragraphs.

(a) **The General Assembly.**

The General Assembly is composed of all members of the United Nations. Its Composition, Functions and Powers, Voting and Procedure are contained in Chapter IV, Articles 9-22 of the Charter of the United Nations. Provisions with respect to the General Assembly also appear in other parts of the Charter. The character of the General Assembly and its importance in the whole concept of the Charter indicate, amongst others, the following respects in which the Authority may properly be related to it.

(i) The Authority should submit periodic and, when necessary, special reports to the Assembly concerning the Authority's activities, programmes, and information.

(ii) The provisions for discussion and recommendation by the Assembly contained in the Charter should be construed to include matters pertaining to the Authority.

(iii) The Assembly also might appropriately have a role in connection with the budget of the Authority.

(b) **The Security Council.**

The Charter of the United Nations confers on the Security Council primary responsibility for the maintenance of international peace and security. (Chapters V, VI, VII, VIII, and XII). Many of the important features of the control and development of atomic energy, though by no means all of them, are intimately associated with the maintenance of international peace and security. With respect to these features, the Authority and the Security Council must

be brought into close relationship. The following particulars in this regard are suggested:

(i) In the event of an occurrence within the area of the Authority's jurisdiction constituting a threat to the peace, breach of the peace or act of aggression, such occurrence should immediately be certified by the Authority to the Security Council, the Assembly, and the signatory states. The treaty should establish this category of offenses and the conditions surrounding them. For purpose of illustration, they might include violations such as those specifically mentioned by Mr. Baruch in the United States proposal, viz:

"(a) Illegal possession or use of an atomic bomb;

"(b) Illegal possession, or separation, of atomic material suitable for use in an atomic bomb;

"(c) Seizure of any plant or other property belonging to, or licensed by, the Authority;

"(d) Willful interference with the activities of the Authority;

"(e) Creation or operation of dangerous projects in a manner contrary to, or in the absence of, a license granted by the Authority."

The controls established by the treaty would be wholly ineffectual if, in any such situations, to be defined in the treaty, the enforcement of security provisions could be prevented by the vote of a state which has signed the treaty. Any other conception would render the whole principle of veto ridiculous. It is intended to be an instrument for the protection of nations, not a shield behind which deception and criminal acts can be performed with impunity. This in no way impairs the doctrine of unanimity. No state need be an unwilling party to the treaty. But every state which freely and willingly becomes a party to the treaty, by this act, solemnly and firmly binds itself to abide by its undertakings. Such undertakings would become illusory, if the guarantee against their breach resided solely in the conscience of the one who commits the breach.

All parties to the treaty and all peoples of the world, must have protection of a final and dependable character against the terrible consequences of the destructive use of atomic energy. Such protection requires international machinery which can and will function quickly — machinery which does not permit the offender to be protected by his own or another's negation of the exercise of joint power essential to the security of all. Particularly is this true, with respect to matters which become essentially procedural once the Authority has made its certification based on the substantive provision of law established by the treaty.

The relation of the Authority to the Security Council should recognize this principle. Subject to this principle, the Security Council should have full jurisdiction over serious violations certified to it by the Authority. This is no manner impairs or diminishes the power or the modus operandi of the Security Council in any other situation.

As the United States Representative on the Atomic Energy Commission stated at the opening session:

"I want to make very plain that I am concerned here with the veto power only at it affects this particular problem. There must be no veto to protect those who violate their solemn agreements not to develop or use atomic energy for destructive purposes."

Voluntary relinquishment of the veto on questions relating to a specific weapon previously outlawed by unanimous agreement because of its uniquely destructive character, in no wise involves any compromise of the principle of unanimity of action as applied to general problems or to particular situations not forseeable and therefore not susceptible of advance unanimous agreement.

What has been said above must be emphasized. It is not intended to limit the powers, authority, responsibility or jurisdiction of the Security Council to maintain international peace and security. It is quite possible that in a major case of aggression, violation of the atomic treaty and the rules of the Authority may play an incidental part. Nothing herein suggested is intended to restrict or limit the over-riding powers of the Security Council to deal with such matters unaffected by the incidental inclusion of atomic energy considerations as part of the problems.

(ii) It is impossible to treat this subject without reference to Article 51 of the Charter, which provides as follows:

"Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations, until the Security Council has taken the measures necessary to maintain international peace and security. Measures taken by members in the exercise of this right of self-defense shall be immediately reported to the Security Council."

Interpreting its provisions with respect to atomic energy matters, it is clear that if atomic weapons were employed as part of an "armed attack," the rights reserved by the nations to themselves under Article 51 would be applicable. It is equally clear that an "armed attack" is now something entirely different from what it was prior to the discovery of atomic weapons. It would therefore seem to be both important and appropriate under present conditions that the treaty define "armed attack" in a manner appropriate to atomic weapons and include in the definition not simply the actual dropping of an atomic bomb, but also certain steps in themselves preliminary to such action.

(iii) The Authority may be required to carry out certain decisions by the Security Council with respect to which the assistance of the Authority is deemed appropriate.

(iv) Reports and other information should be submitted by the Authority to the Council concerning the Authority's activities, programmes, and information, particularly as they bear upon the maintenance of international peace and security.

(v) Consultation by the Military Staff Committee with the Authority on questions relating to the military repercussions of the Authority's plans, or actions should be provided for in the treaty.

The foregoing indicates the manner in which appropriate relations between the Authority and the United States might be established in accordance with the principles stated by Mr. Baruch in the United States proposal.

* * *

The activity of Sub-Committee 1 ended on July 12, before it had time to consider the U.S. memorandum No. 3. Dr. Evatt summarized the Sub-Committee's deliberations in the following report to the Working Committee of the whole commission.

**GENERAL REPORT OF SUB-COMMITTEE NO. 1**

DR. H. V. EVATT

1. Pursuant to authority conferred upon me as Chairman of the Working Committee of the Atomic Energy Commission at a meeting held on June 28, 1946, I appointed to membership of Sub-Committee No. 1 the representatives of France, Mexico, the United Kingdom, the United States, and the U.S.S.R., together with the Chairman of the Atomic Energy Commission.

**TERMS OF REFERENCE**

2. The duties of Sub-Committee No. 1 were broadly to consider the principles and proposals presented to the Atomic Energy Commission and ascertain the area of actual or prospective agreement having in view the ultimate preparation of a framework of an international instrument for the control and development of atomic energy to secure its use for peaceful purposes only.

3. The Sub-Committee held five meetings on July 1, 2, 5, 8 and 11 respectively. At every meeting the entire membership was present. After the first two meetings I directed that every country not already represented on the Sub-Committee could be represented by an observer if so desired. Advantage was taken of this direction.

4. At its five meetings Sub-Committee No. 1 considered the main principles of the various proposals presented to the Atomic Energy Commission and the Sub-Committee itself. Full opportunity was afforded to all members to present views and additional proposals and to ask questions of others in the interest of clarification. There was a frank exchange of views, the value of which should become evident as the task of the Commission is carried forward.

**WORKING DOCUMENTS**

5. As an aid to its discussion, the Sub-Committee had before it six documents prepared by the United States, Australian and French delegations, as follows.

(a) Chart prepared by the United States Representative showing the attitude of delegations on specified topics and proposals made to the Atomic Energy Commission (This chart has been amended by delegations in several respects).

(b) Tentative Proposals by the Chairman of the Atomic Energy Commission, Dr. Herbert V. Evatt (Australia), submitted July 1. (Suggesting the examination of certain general principles of a multilateral treaty on atomic energy).

(c) Document containing the point of view of the French Delegation on questions of principle discussed in the first meeting of Sub-Committee No. 1, submitted July 2.

(d) Memorandum submitted by Mr. Ferdinand Eberstadt on behalf of the United States Delegation, submitted July 2.

(e) Memorandum No. 2 submitted by the U.S. Representative, dealing with the functions and powers of the proposed atomic development authority, submitted July 5.

(f) Analysis of the relationship between organized measures for the international control of atomic energy and the United Nations organization (particularly the Security Council) by the Chairman of the Commission, Dr. Herbert V. Evatt, (Australia), submitted July 8.

6. The procedure in Sub-Committee No. 1 was informal throughout and no votes were taken. The observations which follow are therefore made upon my own responsibility in order to assist the future work of the Commission.

7. Three important questions of principle detailed consideration of which will be essential before any final plan can be drafted, were examined during the discussions. There may be stated as follows:

**PROPOSED INTERNATIONAL CONVENTION**

A. Whether it is desirable to negotiate an international convention dealing solely with the "outlawing" of atomic weapons and the destruction of existing stocks, or whether on the other hand, the obligation not to make or use such weapons should be included within the framework of a broad general plan, an essential part of which should be an effective system of controls to make sure that atomic energy would be employed for peaceful purposes only. The opinion of the majority of the Committee favored the second alternative. Such alternative is basic to the United States proposals as explained by their representative in the Sub-Committee and also by Mr. Baruch in his opening address. Moreover, for reasons which I mention below (paragraph 9), I am of the opinion that the second alternative is the only course which is really consistent with the terms of reference of the Atomic Energy Commission itself. (Assembly Resolution Paragraph 5 (b) and (d)).

**INTERNATIONAL CONTROL**

B. The general type of international controls and measures necessary for inclusion within the framework of a general plan, including in such controls the establishment of a special international agency vested with executive power to determine and enforce controls and also to promote development of atomic energy for peaceful purposes.

The general type of possible control measures and the functions of such an international agency are indicated with clarity in the United States documents (d) and (e) listed in Paragraph 5 above.

**RELATIONSHIP OF CONTROLS TO U.N.O.**

C. The relationship between organized measures for the international control of atomic energy and the United Nations organization, particularly the Security Council.

As to this a juristic analysis of the legally permissible and practicable principles of relationship is contained in the Australian document (f) listed in Paragraph 5 above. This document was prepared by me on the hypothesis that the United Nations Charter remains for the time being in its present form. The Australian delegation has always favored at least the limitation of the veto power to the specific sanctions (e.g. commercial boycott, the levying of war by the United Nations against a proved aggressor) which the Security Council may impose under Chapter VII of the Charter. Indeed Australia took a leading part in the proposals made at the San Francisco Conference to restrict the veto, and recent experience confirms the wisdom of such proposals. However, in order to make specific proposals "with the utmost despatch" for the limitation of the use of atomic energy to peaceful purposes, practical common sense dictates that such specific proposals should not be dependent for their efficacy upon the remote possibility of complete and prompt removal from the Charter of the veto upon sanctions, a veto which is possessed by each permanent member of the Council.

**PLACE OF CONTROLS IN THE INTERNATIONAL PLAN**

8. As regards the first question, above, all members of the Sub-Committee agreed in principle that at a stage to be determined, an international agreement not to produce or use atomic weapons for purposes of war, should be entered into. It was contended by the representative of the U.S.S.R. that an agreement of this kind should be entered into immediately, i.e. before the establishment of a general plan for an effective international control of atomic energy. However, the majority of the Sub-Committee (including the U.S., which alone possesses atomic weapons) were strongly of the opinion

(a) that a mere convention outlawing the use of atomic weapons could not be regarded as adequate, especially having regard to past experience of the inefficacy of certain international pacts,

(b) that atomic weapons could and should be eliminated by direct measures of inspection and control and

(c) that this system of control would make the proposed convention largely superfluous while ensuring the carrying into effect of its disarmanent objectives.

**NEED FOR EFFECTIVE GUARANTEES**

9. This conclusion appears inescapable if due account is taken of the instruction given to the Atomic Energy Commission in Paragraph 5(b) of the resolution adopted by the General Assembly on 24th January, 1946, i.e. to "make specific proposals for the control of atomic energy to the extent necessary to ensure its use only for peaceful purposes". It is clear that a convention unaccompanied by controls could not possibly be regarded as sufficient to "ensure" the use of atomic energy for peaceful purposes only. That objective can be achieved only by effective controls and guarantees amounting to a practical physical certainty that atomic bombs will not be used for military purposes because they cannot be brought into existence. As between continous and positive controls (including inspection), and a mere convention to disarm (which at present would apply in fact only against the United States), the Assembly impliedly preferred the former course. That course is in accordance with the assessment of the situation made by the majority of the Sub-Committee solely in a desire to reach a satisfactory solution of a great problem.

10. It seems to follow that in order to arrive as rapidly as possible at the stage where atomic weapons can be eliminated effectively and permanently, it is essential to proceed with the detailed preparation of an adequate system of international control. This system is an integral feature of the Baruch plan and in the opinion of the majority of the Commission as expressed in the public and private discussions, it is demonstrably just and equitable in the interests of all humanity.

## MEASURES FOR INTERNATIONAL CONTROL

11. The Sub-Committee discussed in general terms the measures suggested by the United States for the control of atomic energy. The United States representative contended, and this view found strong support in the Sub-Committee, that effective control can be ensured only by the establishment of an atomic energy agency with broad powers of ownership, managerial control and supervision, leasing, licensing and inspection.

## POWERS AND FUNCTIONS OF ATOMIC ENERGY AGENCY

12. There was also considerable support for the view that this agency should—

(a) have power to obtain complete control over or ownership of all uranium, thorium, or other potential source of atomic energy;

(b) be empowered to conduct investigations and surveys of sources of atomic energy;

(c) own or rigidly control all facilities for the production of U235, plutonium and such other fissionable materials as it determines to be dangerous;

(d) control such other facilities and activities in the field of atomic energy as would be dangerous in other hands;

(e) have free and unhindered access to and power to control, license and inspect all other facilities which possess, utilize or produce the materials which are a source of atomic energy;

(f) have the exclusive right of research in the field of atomic explosives;

(g) foster and promote the non-dangerous use and wide distribution of atomic energy for beneficial purposes under licenses or other suitable arrangements that it may establish;

(h) be authorized to make and issue such rules and regulations and take such action as is necessary to accomplish the purposes assigned to it.

13. It was clear from our discussions that it is essential to proceed at once to a more detailed examination of actual control measures and their applications. What next should be considered are specific proposals rather than statements of principle. When this is completed, it should be possible to make progress toward resolving the difficult questions of the precise functions and powers of the atomic energy agency and its precise relationship with the organs of the United Nations, in particular the Security Council.

## RELATIONSHIP TO THE UNITED NATIONS

14. In the Sub-Committee there was general support of the view that if the system of control was inaugurated, it should be established by a single treaty which would define the obligations to be accepted by member States and at the same time establish the control agency, and define its form of organisation, functions and powers. So far as necessary the same instrument could define the relationship between the agency and the various organs of the United Nations. Further study is required to define exactly what that relationship should be. It seems to me clear, however, that the control agency must be constituted in such a way that it can, within its defined powers of inspection and control, act without undue delay.

15. The questions of the "sanctions" which such an atomic energy agency should be authorised to impose, the voting procedures within the atomic energy agency, and the division of functions between such an agency and the Security Council of the United Nations are all difficult, but they must be faced and overcome. That can be done only by a continuance of the frank exchange of views which have characterised the work of the Sub-Committee.

16. It was suggested during the Sub-Committee discussions by the delegate of the U.S.S.R. that it is or may be unnecessary to confer enforcement powers on an atomic energy agency, because any necessary enforcement action could be taken by the Security Council. While it is generally recognised that the Security Council must retain its defined executive powers so long as the Charter of the United Nations remains in its present form, it is in my opinion legally and practically impossible for the functions of the Security Council to be enlarged in order to include the multifarious and detailed executive decisions involved in the administration of a treaty providing for the control and development of atomic energy. In my opinion, the Security Council has, under the United Nations Charter, no executive powers of such a character. Its executive powers exist only in situations where a threat to the peace, breach of the peace or act of aggression has been proved to exist in accordance with Chapter VII.

17. The urgent problem facing us is to devise means by which power may be given by an international treaty to an atomic energy agency to control and supervise atomic energy development in such a way that neither threats to the peace nor breaches of the peace nor acts of aggression can be caused by the employment of atomic weapons. In other words our objective is to make the control system so effective that plans for violation or evasion—whether of a major or minor character—may be detected at the earliest stages and prompt measures taken for effective prevention.

18. If, however, the control system of the international agency were in any particular case shown to be inadequate or ineffective, the machinery of the Security Council could be invoked either by a complainant State or if it were so agreed, by the atomic energy agency whenever the special situations mentioned in Chapter VII of the United Nations Charter seemed likely to occur.

## THE VETO

19. I return to a frank consideration of the veto. Mr. Baruch, in his opening speech, said "I want to make it very plain that I am concerned here with the veto power only as it affects this particular problem. There must be no veto to protect those who violate their solemn agreements not to develop or use atomic energy for destructive purposes". On behalf of Australia I have endorsed this statement which I do not interpret as a demand for an amendment of the United Nations Charter in relation to the method of voting in the Security Council when that body is dealing with the imposition of sanctions under Chapter VII. In point of fact such an amendment would be legally impossible without the consent of each one of the five permanent members: for the individual "veto" in respect of voting in the Security Council is protected by the individual veto in respect of United Nations Charter amendment.

20. I also interpret the remarks of Mr. Gromyko that "efforts directed to undermine the unanimity of the Members of the Security Council upon questions of substance are incompatible with the interests of the United Nations" as indicating a resolve on the part of the U.S.S.R. not to consent to any alteration of the Charter at least so far as it affects voting in the Security Council on questions of sanctions under Chapter VII.

21. I am convinced that in the end the solution of our task will be in the preparation, for submission first to the Security Council and eventually to the United Nations, of a multilateral treaty embodying four vital subject matters i.e.

(a) an overall plan for international

control of atomic energy and its development for peaceful purposes;

(b) the charter of an international atomic energy agency with wide powers to administer the plan and put it into effect;

(c) obligations by member States not to use atomic energy for purposes of destruction, and

(d) terms and conditions under which the several parts of the plan shall become operative in just and equitable sequence.

22. It seems to me plain that the broad principle, advocated so strongly by Mr. Baruch as U.S. Representative in the above quoted words, would be carried into substantial effect provided it is understood from the outset that every party to the atomic energy treaty will be subject to the rules of conduct laid down either in the treaty itself or by the international controlling agency established by such treaty. It follows from the same principle of the rule of law that no system of veto could possibly be permitted in the procedure of the atomic energy agency, simply because that would mean a right or privilege to claim a special immunity or exemption from the rules and regulations of conduct, thus subverting the main purposes of the overall plan. For such reasons each and every nation entering into the atomic energy treaty must be bound by all its obligations.

23. It is apparent that there are two ways in which the binding effect of the system of international controls could be evaded and practical immunity from its general rules gained by a nation. The first method would be to include openly and directly in the proposed treaty provisions for granting such immunity to one or more nations. But it is evident that the great majority of the nations could not be expected to endorse privileges and immunities which would destroy the practical effectiveness of international control.

24. The second method of achieving the same result would be by way of indirection, i.e. to confer upon the Security Council the additional function of administering the control system. In this second case the result would be that each permanent member of the Security Council, by exercising the existing privilege of veto, could in effect confer immunity upon itself or any other country in any particular case of enforcement of controls. This second indirect method seems as inadmissible as the first and as little likely to secure general acceptance.

25. For these reasons it will, in my view, become increasingly apparent that in order to carry out the principles of the Baruch proposals and the mandate given to the Atomic Energy Commission by the Assembly, a special international agency for atomic control and development will have to be established by multilateral treaty—such agency being vested with administrative and executive powers, and being made responsible to the signatory nations and also brought into special relationship with the United Nations Organization.

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After July 12, the "Sub-Committee 1" was replaced by "Committee No. 2", which had, as its terms of reference:

"To examine questions associated with the control of atomic energy activities including all measures designed to insure the prevention of the use of atomic energy for purposes of destruction, and other weapons of mass destruction, and also including subject matters of possible Conventions, Sanctions and Observance, and to make specific recommendations of the said subjects."

It consisted of one representative of each country on the Atomic Energy Commission.

Another Committee established by the Working Committee on the same date was the Legal Advisory Committee, consisting of representatives of all twelve delegations, whose terms of reference were as follows:

"To act as an auxiliary to the Working Committee and other Committees in respect of all legal matters and to advise on all drafting questions. The Committee would also examine 1) the legal aspects of the relationships between the system of measures of control recommended by Committee No. 2 and the United Nations, and 2) will ultimately submit a draft treaty or treaties to the Working Committee."

Finally, a Scientific and Technical Committee was established consisting of one scientific adviser appointed by each of the twelve countries represented on the Atomic Energy Commission.

"To advise the Working Committee and all other Committees or the Commission on scientific and technical questions referred to us. Also a) to consider and recommend proposals for the exchange of information; b) to consider and recommend proposals for the peaceful uses of atomic energy; and c) to consider and recommend proposals on all scientific and technical matters connected with the activities of the Commission.

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On July 24, Mr. Gromyko presented, before "Committee No. 2", a speech which referred specifically to the American memorandum, No. 3, and can be considered as the final statement in this stage of deliberations. No full transcript of this speech is available; we report it from the official UN press release. Mr. Gromyko said that he wished to make some observations on the substance of the United States Memorandum No. 3, submitted to the former Sub-Committee No. 1 of the Atomic Energy Commission on July 12.

Mr. Gromyko began his observations by stating that he attached great importance to the question whether or not the existing organs of the United Nations are empowered to deal with problems of control over atomic energy. Whereas the United States memorandum states that existing organs of the United Nations are not empowered to deal with the questions relating to the control of atomic energy, the USSR feels that "such conclusions cannnot be justified." The United Nations Charter mentions no specific type of arms which might be used by an aggressor, but deals with this subject in general terms, and grants to the Security Council full power and rights to deal with such matters. That is, the Security Council "is able and has full power" to deal with these questions; the Atomic Energy Commission was established to assist the Security Council in these matters, but the Council should make all final decisions.

In respect to decisions relating to the control of atomic energy and to decisions to be made by an Atomic Development Authority, as proposed by the United States representative, the United States memorandum drew up three categories (administrative matters, procedural matters and serious offenses). **These proposals "are of such a character that in reality such an Authority would be independent of the Security Council and would have almost full autonomy. This cannot be reconciled with the Charter of the United Nations."**

The United States memorandum realizes, said Mr. Gromyko, that the broad functions and powers of the Atomic Development Authority in the field of control, inspection and in other fields are difficult to reconcile with the relevant provisions of the Charter ensuring the sovereignty of Member States of the United Nations. The United States proposed therefore that all matters related to atomic energy should be considered as matters of international and not of national importance and jurisdiction in order to make Article 2(7) of the Charter of the United Nations inapplicable to matters of atomic energy. Mr. Gromyko stressed that "when the Charter of the United Nations was prepared by the Conference at San Francisco, the question of sovereignty was one of the most important questions considered. **This principle of sovereignty is one of the cornerstones on which the United Nations structure is built; if this were touched the whole existence and future of the United Nations would be threatened."**

In respect to the relationship between the Atomic Development Authority and

the General Assembly of the United Nations, said Mr. Gromyko, it is to be noted that there were no proposals in the United States memorandum which "would mean weakening the provisions by which the rights and functions of the General Assembly are assured." This is right, stated Mr. Gromyko, since the powers of all organs of the United Nations must be protected. While the rights of the General Assembly were not minimized, on the other hand the United States memorandum denied the Security Council the rights it should have under the Charter. Such a situation could not be considered as normal. The position of the Soviet Government was that the power, authority and prestige of the Security Council should not be undermined in connection with the problem of atomic energy.

Mr. Gromyko declared further that the United States proposals also "change entirely the meaning of Article 51 of the Charter."

On the question of the voting procedure in the Security Council Mr. Gromyko said: "on this question also I should like to make again clear the position of the Soviet Union that we cannot accept any proposals that would undermine in any degree the principle of the unanimity of the permanent members of the Security Council in the maintenance of peace and security." Mr. Gromyko noted that he had already made the position of the Soviet Government on this question quite clear at the second meeting of the Atomic Energy Commission and that he thought it would be dangerous and perhaps fatal to undermine this principle which was embodied in the Charter of the United Nations at San Francisco in recognition of its necessity for maintaining peace and security. The great powers, said Mr. Gromyko, will provide the main means against aggression, and this was recognized in the San Francisco decision on the voting procedure in the Security Council.

In conclusion Mr. Gromyko said: **"the United States proposals (referring to United States Memorandum No. 3) in their present form cannot be accepted in any way by the Soviet Union either as a whole or in separate parts."**

* * *

*This speech squelched, at least temporarily, all hopes of reaching agreement with USSR on the establishment of an Atomic Development Authority largely independent of the Security Council, and endowed with discretionary power of its own.*

## THIRD STAGE—DISCUSSION OF THE SOVIET PLAN

In the third part of the deliberations of the UN Atomic Energy Commission, attention was switched from the American ADA plan to the Russian proposal. Mr. Gromyko was invited to develop his plan in more detail, in the expectation that after a month's debate, which had revealed universal desire for an effective implementation of any agreement on outlawry of atomic weapons, he might enlarge on the means by which the USSR proposes to enforce the Convention on Prohibition of Atomic Weapons which Gromyko suggested on June 19. This expectation was not fulfilled; Mr. Gromyko merely restated his previous position. Instead of making concessions to the principle of effective con trol and enforcement of the agreement by an international agency, he praised the principle by which each sovereign nation would enforce the covenant within its own borders.

The disappointment over this stubbornness of Mr. Gromyko's attitude found expression in the next speech by the representative of Holland.

The speech of Mr. Gromyko is reprinted in full below; that of Mr. Van Kleffens appears on p. 31.

### SOVIET ATOM CONTROL PLAN
### A. GROMYKO (RUSSIA)

At the second meeting of the Atomic Energy Commission I proposed in the name of the Soviet government the conclusion of a convention outlawing the production and use of atomic weapons for purposes of mass destruction. The Soviet government attaches great importance to the conclusion of such a convention.

It is impossible to consider practically the control over atomic energy without considering at this time the question of the conclusion of a convention outlawing the production and use of atomic weapons There are no serious obstacles to the conclusion of such a convention if the countries on the Atomic Energy Commission really and sincerely wish to take practical steps toward the control of atomic energy and for its use for peaceful purposes only. The only obstacle could be the wish not to place all discussions on a practical basis with the purpose of finding a practical solution of the problem.

The task is made easier by historic precedents: Civilization gives the example that countries, if they wish, can conclude conventions against the use of weapons for mass destruction. Such a convention was concluded with regard to gases and other poisonous substances and liquids.

The task of concluding such a convention is not so complicated if we really desire to prevent the use of atomic energy as a weapon.

The Soviet draft convention contains also concrete points. For instance, Paragraph B, Article 1, which provides that the production of atomic weapons be forbidden and that their production as well as their use shall be considered a serious offense against humanity. Thus one of the first steps toward the realization of control over atomic energy is the prohibition of the production of atomic weapons.

The main task of the Atomic Energy Commission, according to the resolution of the General Assembly, is to insure that atomic energy should not be used for purposes of mass destruction. If all countries agree to this, we ask how is the production of atomic weapons to be reconciled with this purpose? It is impossible to reconcile production of atomic weapons with the task of using atomic energy for peaceful purposes only and with the spirit and the principles of the United Nations.

The draft convention contains also concrete provisions providing for the destruction, within three months after its conclusion, of all stockpiles of atomic weapons and of unfinished atomic weapons. This also is a practical proposal, a step toward the solution of the problem of the use of atomic energy for peaceful purposes only. We ask why nations should produce stockpiles of atomic weapons if we all agree that atomic energy should be used only for the benefit of mankind.

The draft convention contains a provision that signatory states should within six months of its conclusion enact legislation providing for severe punishment for violations of the convention. This is wholly in accord with the seriousness of the task as well as with the principle of the sovereignty of member states and with the principles of the United Nations. It further underlines what great importance the United Nations attach to provisions for insuring the use of atomic energy only for the benefit of mankind and of science and not to the detriment of humanity. The conclusion of such a convention would, without doubt, make a very favorable impression on all peace-loving states and would promote good neighbor relations between nations.

In connection with the proposal for a draft convention some details would possibly have to be elaborated by this committee or by the Atomic Energy Commission.

The Soviet proposal has, compared to those of other countries—which may, on the surface appear to be radical but cannot carry us to our goal—the merit of being a practical one, providing for the immediate and practical steps toward the control over atomic energy. The eyes of all peace-loving nations are focused on the work of the Atomic Energy Commission, and the peoples of the world expect this commission to suggest to the Security Council practical measures for the control of atomic energy. Such practical measures are contained in the Soviet proposasl.

# British Views of Atomic Energy . . . . . from "Nature"

*This article is from a series of two editorials in the distinguished English scientific journal, Nature, (June 22 and June 29).*

On January 7, 1946, the United States Secretary of State appointed a Committee on Atomic Energy, with Dean Acheson as chairman, to ensure that the American representative on the Atomic Energy Commission of the United Nations Organisation would be properly briefed; this Committee appointed a board of consultants which produced "A Report on the International Control of Atomic Energy." The significance of this report has evidently been appreciated by the British Government, for it has been re-issued by H. M. Stationery Office. The Atomic Scientists Association recently formed in Great Britain, has also prepared a memorandum* for submission to the Atomic Energy Commission, the recommendations of which in the main follow closely those made by the American Committee. Dr. H. E. Wimperis made a brief study, at the invitation of the Royal Institute of International Affairs, of the impact upon international relations of the new weapons, and has extended it to form a little volume, "World Power and Atomic Energy", in which, after setting the atomic bomb in its true perspective as only one of a series of scientific developments, accelerated by the War, which have been harnessed to war purposes, he reviews briefly the scientific, political, international and ethical aspects. In the purely political field, the Government has introduced its Atomic Energy Bill; and on the ethical plane a commission appointed by the British Council of Churches, under Dr. J. H. Oldham as chairman, to consider the problems created by the discovery of atomic energy, has issued a reportfi in which the moral and ethical aspects in particular are profoundly discussed, even if it is hard to find an answer to many of the questions raised. Thus the Atomic Energy Commission has useful material before it to facilitate its deliberations, on which indeed the fate of civilization may be said to depend.

## THE LILIENTHAL AND ASA REPORTS

From the scientific point of view, one may well turn first to the American report, around which, as the British memorandum shows, scientific and technical discussion of the problem is likely at the moment to be centred. Moreover, the American board of consultants under the chairmanship of Mr. D. E. Lilienthal, and also the Acheson Committee responfinal plan, but as a starting-point for the informed public discussion which is one of the essential factors in developing sound policy. As pointed out by Prof. Oliphant, it provides a really constructive analysis of the question of international control, and a hopeful approach to a solution of the whole problem.

* * *

*There follows a resumé of the Lilienthal Report, with which the readers of the Bulletin may be assumed familiar.*

* * *

It is clear that the scientific workers of the United States have taken a most important step in preparing the way for their country to accept the responsibilities of leadership, which possession of so much of the technical knowledge of production in this field lays upon them; and the task of further discussion of these proposals, so far as they concern the government of the United States, and the simultaneous task of educating public opinion in that country in support of the proposed plan or a modification of it is one that they are clearly determined to discharge. But there are like responsibilities that the publication of the report places upon scientific workers in other countries, if the Lilienthal plan or any other scheme of international control is to succeed. Not merely must public opinion be prepared for the surrender of national sovereignty involved: no less important, the scientific and technical aspects of the plan must be searchingly but constructively reviewed, and alternative and constructive proposals advanced to cover any features in which it appears to be defective or unacceptable.

The recommendations of the Atomic Scientists' Association, a body of British men of science who have been associated with atomic energy projects, as set forth in a memorandum on the international control of atomic energy issued shortly after its formation, are on similar lines to those of the Lilienthal Board. An immediate attempt is urged to obtain international agreement by which the use of atomic energy, the distribution of the essential raw materials, and the erection and operation of plants designed to produce or capable of producing active materials, would be strictly controlled by the United Nations Organisation. The control would be implemented by a system of inspection, and all major sources of raw materials and major production plants would be handed over to the United Nations Organisation and operated under international boards responsible to it, and guarded by men also responsible to and appointed by that Organisation. The Atomic Energy Commission should undertake the construction and operation of new large-scale plants for the production of fissionable materials. These plants should be so distributed throughout the world as to ensure that if any nation seize control of plants operating in the area in which its own armed forces predominate, the remainder of the United Nations would jointly possess an overwhelming superiority in the production of fissionable material.

The disposal of active materials produced in such plants and the research, development and production of atomic explosives would be reserved to the United Nations Organisation, and any bombs made in that way or made prior to the scheme should be kept in stores distributed throughout the world. The Association does not commit itself to regarding the atomic bomb as a desirable or suitable weapon for police functions, but considers production and control of atomic bombs by an international authority as essential at present to prevent any ill-disposed nation holding the threat of atomic warfare over the peace-loving nations. The Association is impressed with the feasibility of the division of atomic energy activities into 'safe' and 'dangerous' categories, as suggested by the Lilienthal Board, and the memorandum also includes a recommendation in favour of lifting the secrecy rules and ultimately carrying on all research and development freely and openly, with a duty to report to the United Nations Organisation any significant results.

## THE BRITISH ATOMIC ENERGY BILL

One first step to which British men of science must address themselves forthwith is the scrutiny of the Atomic Energy Bill and any other legislative or executive measures which the Government proposes to take in this field; so as to ensure that no action is taken which will impede either the work of the Atomic Energy Commission itself or the attainment of international agreement on this difficult question. The powers which the Atomic Energy Bill gives to the Minister of Supply are indeed wide, but they appear to be necessary at present, and should in fact facilitate the handing over of the specified dangerous operations to international authority in accordance with any plan on the lines suggested by the Lilienthal Board. The Bill charges the Minister with the general duty of promoting and controlling the development of atomic energy, as well as its production and use and the prosecution of research. He has power to obtain information concerning any materials, plant or processes connected with the production of atomic energy, including that of entry and inspection of premises, as well as powers of search for minerals from which uranium and other pre-

* This report was published in the **Bulletin** v. 1 No. 12.

scribed substances might be obtained, the right of working and powers of control over the working of any such minerals.

A further clause in the Bill restricts the disclosure, without the consent of the Minister, of information concerning any existing or proposed plant for producing or using atomic energy, the purpose or method of operation of any such plant or process, except plant designed solely for research or educational purposes. This power clearly is required as a preliminary to the ordered release of information. Similarly, the scheme outlined by the Lilienthal Board should remove the fear that scientific research at the universities may be hampered in spite of the specific exception already noted. This is probably the most substantial criticism that can be advanced against the general terms of the Bill; but it needs to be remembered that the Atomic Energy Bill, like similar legislation in the United States, while in one respect preparing the way for an international authority, in itself leaves the matter in the most dangerous position. The dangerous aspects of atomic energy must be taken out of national hands and placed in international hands quickly; and the longer the delay in establishing such an authority the greater the danger, not merely of an uncontrollable atomic armament rivalry between the nations being precipitated, but also the greater the difficulties of the transition period, to which the Lilienthal Board directs special attention.

## POLITICAL ASPECTS OF CONTROL

Here, of course, we are largely entering the political field, as distinct from the technical or scientific, but the man of science or technician has a perfect right to give his views on the political conditions in which any scheme for international control can function successfully. This the Lilienthal Board has done, and there lies upon their fellow men of science the responsibility not merely of scrutinizing the technical aspects of the plan but also of ensuring that those essential political considerations, as well as the broad technical features of the scheme, are fully understood by their fellow citizens. No plan such as is proposed could wisely be undertaken unless there were valid hope that it would be entered into, and carried through, in good faith; and that in itself presupposes public understanding of the indispensable requirements of the plan.

No part of its report is more praiseworthy than that in which the Lilienthal Board endeavours to prepare public opinion in the United States for the implications of any such scheme, and the disappearance of the present monopoly, both in knowledge and physical facilities. Scientific workers already recognize that knowledge will become general; for the science on which the release of atomic energy rests is essentially a world-wide science, to which men of many countries have contributed, and the principal findings on which the success of the project depends are well known to workers in the field of nuclear physics everywhere. Further, the ultimate balance towards which a plan for international control must work will witness the loss also of material facilities, so that neither in legal possession nor in geographical distribution is any one nation unduly favoured.

But there is one point here that should be made plain. The Lilienthal Board, in proposing an international authority, is using the word in a particular sense—that of a super- or extra-national body. It does not advocate the disclosure of the critical items of fundamental knowledge or of the technique of production to national governments in the way that immediate disclosure to the United Nations Organisation would involve. What it proposes is an impartial body standing outside and above national rivalries and suspicions; and there is sound reason for the United States or Canada or Great Britain declining to impart the essential information of this type to any other body. It seems clear from the Atomic Scientists Association's memorandum that this view is shared by British men of science also, and Dr. Wimperis in his book quotes an emphatic opinion to the same effect from Prof. A. Einstein. Until the individual nations are prepared to renounce national sovereignty to that limited extent, atomic energy will continue to represent the great menace of our age, and its potentialities for good will remain an unsubstantial shadow.

While, as Prof. M. L. Oliphant has pointed out in reviewing the proposals of the Lilienthal Board for the international control of atomic energy, countries whose interest in the peaceful production of power by nuclear methods is more direct than that of countries like the United States richly endowed with coal and other sources of power, may give somewhat different emphasis to some of the points raised, there can be no dissent as to the urgency of the whole problem. If political dilatoriness and self-seeking lead to obstruction and lack of agreement, the Lilienthal proposals and any like scheme may, as Prof. Oliphant remarks, instead of saving the world, have precisely the opposite effect. It is therefore encouraging to note that both the British and Canadian delegates on the Atomic Energy Commission have already signified the support of their Governments for the general principles of the American scheme based on the work of the Lilienthal Board.

It is at this stage that the technical and political aspects merge into the ethical plane; the moral issues raised by the utilization of nuclear energy are the main concern of the report of a commission appointed by the British Council of Churches, with Dr. J. H. Oldham as chairman, and including among its members Sir Walter Moberly, Prof. A. D. Ritchie and Mrs. J. L. Stocks. This report was the first considered statement by a representative group to appear in Great Britain, although it has been followed by the statement from the Atomic Scientists Association, which includes as one of its aims the interpretation of the implications of the release of atomic energy to other men of science and to the general public. The report from the British Council of Churches has little to say on practical policy, but seeks to determine the principles on which policy should be based. In particular, it challenges men to free themselves from the tyranny of habit and of accustomed ways of thinking.

## THE REPORT OF THE OLDHAM COMMISSION

The Oldham Commission, as it may be termed, endeavours to keep in balance the two aspects of the release of atomic energy, which it points out is the culminating point of a process of continuously increasing control of the forces of Nature which has been proceeding for two or three generations; it does not so much present us with new problems as make more acute and urgent problems already before us for which a solution would in any event have been imperative. Society is now confronted with no less than an immediate threat to the continuance of civilization; and unless a war with atomic weapons can be prevented, the use for peaceful purposes of the hitherto unimagined sources of power now placed at the disposal of mankind loses all importance. Before men have learned to control wisely for human good the powers which they already possess, they have had given into their hands, for good or evil, powers of infinitely wider range.

Of the political and social consequences of the new discovery, the Commission observes that atomic energy is a force too powerful and dangerous to be left uncontrolled in private hands; and that unless, and until, effective control of weapons of mass destruction is established, every State will have to reckon with the possibility of a completely devastating attack made without warning, and in consequence a nation may be forced to entrust to its Government the power of immediate attack or retaliation. Again, apart from the indirect consequences involved in such a state of preparedness, the atomic bomb constitutes a peculiar threat to the urban society which is the outstanding characteristic of modern civilization. There may well also be important and far-reaching psychological effects of the intensification of the feeling of insecurity which the

atomic bomb has brought; and while the Commission recognizes the need for swift action in the political field, it believes that a real solution of the difficulties can be found only at a deeper level than that of political arrangement.

The substance of this report and its specific contribution to the debate are contained in the four chapters in which there are successively discussed the choice before society, the problems of power and law, power and the international community and science and society. A brief analysis of social engineering and planning in relation to human progress and of the contrasted attitude of withdrawal from the affairs of society—attitudes which are tending to divide the world into opposing camps—leads to a challenge to develop a responsible citizenship in line with the democratic tradition of Great Britain and of Western civilization, by constantly subjecting national organisation and power to the criticism and correction of ideas working in men's minds, and redeeming ideals and principles from ineffectiveness by supplying power and organisation to realize and uphold them. Stressing the grave dangers which attend the decay of the belief in progress, the Commission emphasizes the necessity for a moral and religious motive which, in Prof. A. N. Whitehead's words, "can render clear to popular understanding some eternal greatness incarnate in the passage of temporal fact".

## A TEST FOR DEMOCRACY

Discussing next the conceptions of popular sovereignty and the supremacy of law, and the synthesis of power and law in the British national tradition, the Commission maintains that the coming of atomic power makes it more than ever necessary to preserve the conditions in which human lives can grow, and in a passage reminiscent of Lord Lindsay's discussion of the functions of the churches and the universities in his "Religion, Science and Society in the Modern World", suggests that our immediate task is to encourage everywhere groups which are learning to practise democratic fellowship and are thereby becoming the nuclei of a new social consciousness. Further, since ideas become effective by being embodied in institutions, it is a vital task in the present crisis to preserve and foster tradition where it still survives, while at the same time fearlessly adapting it and expanding it to meet the demands of a changing society.

The achievement of democracy has been to curb and discipline power, not to abolish it; but although the Commission regards the realization of an effective world community as the most urgent task of our time and the only ideal which now offers reasonable hope of eliminating from human society the danger of atomic war, it does not suggest that such a world community is inevitable or easy to achieve. The obstacles are concisely indicated, and particularly the clash of irreconcilable ways of life which dominates the relations between the Anglo-Saxon world and that of the U.S.S.R. That dilemma is put as clearly as it is by Mr. J. Middleton Murry in his pamphlet "Trust or Perish"; but the Commission of the British Council of Churches does not conclude with him that Great Britain should declare that in no circumstances would we participate in another world war, and that this declaration should be made irrespective of the attempt to put the atomic bomb under international control. On the contrary, it is clear that the Commission is divided on the issue. Some at least of its members regard the problem as the provision of effective means of police action to restrain a lawless and anti-social member of the community of nations from seeking to attain its ends by violence, and that to assume that the best means of saving humanity from atomic warfare is to renounce in advance the right of defence might well prove to be a serious political miscalculation.

## THE ROLE OF THE CHURCHES

The Commission does not believe that Christianity is able with its present insight to pronounce between the two alternatives, but it urges that the intolerable nature of the dilemma by which we would be confronted by an outbreak of atomic warfare is an overwhelming reason for doing all in our power to further the proposal to eliminate from the armaments of all nations weapons adaptable to mass destruction. In the following chapter it admits that the Churches must recognize more fully than they have yet done that, in regard to a host of problems of conduct in our complex society, they do not know the right answer, and that that answer will be found only through the combination of ethical insight with the support of disciplined empirical research. Equally, however, it holds that the world which is apprehended by the methods of science is not the whole of reality, and the real danger to a scientific society is in the increasing opportunities which scientific advance presents to men's power-seeking impulse, and the inevitable extension of the field of organisation in which men are less and less related to one another as responsible persons and become interchangeable units in a vast machinery of production.

To believe in the reform of human society may indeed be an act of faith, but to believe in it without a change of heart, it has truly been said, is an act of lunacy. Here on this ultimate moral plane we find little guidance as to how mankind may come to that humility of soul, the cleansing of hearts from pride, vainglory, hypocrisy and unworthy material ambitions which, Dr. Wimperis reminds us, may be part of the price that must be paid. One thing is certain: mankind must, in Mr. Murry's words, trust or perish; and one essential step to that trust must be the elimination as fully and swiftly as possible of all national claims to secrecy.

The rally of scientific opinion in favour of the free interchange of scientific information is duly acknowledged in the report of the Commission of the British Council of Churches as an event of outstanding importance. It has been made abundantly clear that free communication is the lifeblood of science, and when the Atomic Scientists' Association in its memorandum urges that, as the scheme for international control of atomic energy becomes effective, the existing secrecy rules should be lifted and that eventually all research and development should be carried on freely and openly, with a duty to report to the United Nations Organisation any significant results, it is promoting not merely the interests of science itself but also that wider understanding out of which mutual confidence grows.

## THE ROLE OF THE SCIENTISTS

Powerful and unmistakable as is this support for freedom of communication—the statement also urges that the free movement and interchange of all men of science, including those working on atomic energy, be permitted and encouraged to the fullest extent—it is not support for indiscriminate or precipitate disclosure. That has been made plain alike in the American report on the International Control of Atomic Energy and in the British declaration, and also in Dr. Wimperis' little book; and nothing could be more unfortunate than any action by a responsible body of scientific men which suggested that it in any way condoned such disclosure or the violation of contract clauses. Apart from those technical questions with which the American report is concerned and to which the Atomic Scientists' Association has now given its support, there is no better way in which men of science generally can help forward the development of any scheme of effective control than by exerting themselves with the utmost determination and persistence to preserve both the integrity of science and the fullest possible freedom of communication, and to see that restrictions and secrecy regulations are relaxed or modified in response to reasoned agreement and as part of a considered plan. In that way, through exercising their own power with responsibility, men of science may make also some contribution, however slight, to the resolution of that moral dilemma which confronts both the continuance of civilization and the advancement of science.

# The United Nations Educational, Scientific and Cultural Organization . . . . *Prof. W. Albert Noyes, Jr.*

The United Nations Organization is responsible for dealing with those political matters which could give rise directly to war, but certain other organizations associated with the United Nations may, indeed, have a far reaching effect in easing the way of the politicians in the solution of their problems. It is for this reason that we desire to present a brief report on the United Nations Educational, Scientific, and Cultural Organization.

"A conference to establish a specialized Organization of the United Nations for the interchange of knowledge and the promotion of understanding" met in London at the invitation of the governments of the United Kingdom and of France on November 1, 1945. In about two weeks a constitution had been drafted, and the Final Act of the Conference was signed by the heads of the delegations on November 16. Thus was laid the basis for UNESCO, but there remains ratification by the various participating nations.

**PRELIMINARY ORGANIZATION**

Time and space do not permit a detailed discussion of the actions taken by the aforementioned conference, but a few facts concerning the establishment of UNESCO are pertinent. The Secretariat will be in Paris, but for the moment the Secretariat of the Preparatory Commission charged with the responsibility of drawing plans for the ultimate organization is situated in London and is headed by Julian Huxley, biologist.

The Constitution recommends the establishment in each country of a National Commission to advise its government on policies with respect to UNESCO. However, since the American commission cannot be formed until the passage of authorizing legislation,* the Department of State established some months ago an advisory group in science consisting of seven men representing major fields of science. This group has held numerous meetings and has discussed the plans which it believes the United States should favor as part of the program of UNESCO.

The secretariat of the Preparatory Commission of UNESCO has been divided into nine divisions. The one which concerns us most is the Division of Natural Sciences whose chief counselor is Joseph Needham of Cambridge University, biochemist.

In order to obtain ideas which might form the basis for the ultimate program, each division has called together a committee of one or more advisers from each nation for a two-day meeting in London. It was the privilege of the writer to attend the meeting of the Committee on Natural Sciences of the Preparatory Commission on May 31 and June 1 at 46 Belgrave Square, London. Advisers from 15 nations were present.

**DIFFERENCES OF OPINION**

Before giving a summary of the actions taken at this meeting, it may be advisable to indicate some of the differences in point of view which are encountered in the various countries. There are those who believe that existing international agencies, such as the International Scientific Unions and their Council of Scientific Unions, could suffice for maintaining all necessary international contacts. This type of person seems averse to the adoption of any far-reaching program for UNESCO and expresses some suspicion that UNESCO might lead to an undesirable regimentation in science.

Opposed to the conservatives mentioned in the preceding paragraph are those who believe that UNESCO should operate international laboratories, have commissions dealing with a wide diversity of subjects, and in general be a powerful organization for coordinating scientific activities in the various countries. Cooperation with certain, at least, of the existing international unions is desirable. Indeed, some type of international organization now exists to deal with every conceivable problem. Most such organizations have been ineffective because of lack of funds, lack of proper personnel, or because of jealousies of one sort or another. However, such persons believe that most of these organizations should be discarded and a strong centralized agency such as UNESCO be established.

The attitude in the United States probably falls in a third category, that of ignorance. A relatively small proportion of American scientists seem to have heard of UNESCO and to know what its objectives are. The others must be educated. Of those who have thought about the subject, a majority seem to favor a strong organization.

It is obvious in dealing with this problem that we must keep the ideals of those who desire a high degree of international cooperation, and yet retain the sound judgment necessary to the establishment of a workable organization. Ideals of themselves are of little use unless there are persons at the helm who are capable of putting those ideals into practice. These truisms must be kept in mind in considering the actions of the Committee on Natural Sciences at the London meeting.

**LONDON MEETING**

No formal votes were taken at the meeting. There was a free and sometimes heated discussion of many of the points, and usually one could sense that general agreement was attained. However, some of the points were so vague and so idealistic that even though general agreement was obtained, it was impossible to visualize any mechanism for carrying the desires of the group into effect in the near future.

It scarcely seems necessary to discuss all of the propositions and the attitudes of those present in detail. There were certain general matters with which no scientist could disagree even while admitting that positive action would be excessively difficult of accomplishment. Included in this category would be such propositions as the following: "Assist the restoration of scientific facilities in liberated countries"; "Promote plans for international collaboration of science"; "That UNESCO do everything possible to further completely free exchange of scientific knowledge"; "Do everything possible to establish a universal language of science"; "Further the establishment of a uniform standard of weights and measures"; "That the free importation of books, reviews of science, apparatus and instruments be part of the program of UNESCO, particularly as regards hospitals and laboratories not operated for profit."

Certain of these propositions involve matters of tariff, changes in basic laws of certain countries, and even run counter to certain sensibilities. The restoration of facilities in liberated countries is the responsibility of other agencies and although UNESCO should do what it can along these lines, there seems little of a positive character which could be accomplished at present. Similarly, the subject of reparations is the concern of those drafting peace treaties and was not deemed to be a matter for discussion.

Other matters can be the object of immediate attention. It was recommended that regional offices of UNESCO be established to aid in exchanges of personnel, in surveying needs of the various countries, and to aid in exchanges of information by various devices. Lack of foreign currency is a serious handicap to many activities, and an international organization, such as UNESCO, might be of very material help in this connection.

The relationship of UNESCO to the various international unions and to the International Council of Scientific Unions

* The US has just become a member of UNESCO by joint resolution of Congress. The President is to name five delegates and establish a 100-member national commission to advise them.

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was discussed at the meeting and privately with the president and secretary of the Council. Some unions should be supported, others should be reorganized, and some new ones should be formed. The Council should have an office associated with the headquarters of UNESCO. It is evident that UNESCO could help revive many activities which have been dormant since the start of the war and could aid in strengthening the unions which have been inadequate in the past.

There are other United Nations organizations dealing with specific problems: food and agriculture, public health, atomic energy. The closest cooperation between the Division of Natural Sciences of UNESCO and these organizations is essential, particularly on matters pertaining to research and exchange of scientific information.

## POINTS OF DIFFERENCE

It is best, perhaps, to dwell on one or two points about which there was heated discussion, because it is concerning these points that the real differences of opinion between those who desire a strong international organization and those who do not became apparent. One of these points had to do with exchange of students and of scientific personnel at all levels, and another dealt with the establishment of international research institutes. It can be appreciated that either of these programs carried out on an adequate scale would require substantial funds.

While no single delegate expressed opposition to the principle of large-scale exchange of scientific personnel, there were those who believed that existing mechanisms were adequate for accomplishing all that is necessary in this respect. It is true that various foundations already carry part of this burden, and that there are various bilateral agreements between countries for exchanges of students and of professors. However, one speaker made a strong plea for exchanging other types of persons, such as laboratory technicians, mechanicians, and glassblowers, so that the various techniques of making apparatus could be made more common knowledge. Another speaker explained that his country had been cut off seven years by the war, and that he was strongly desirous of sending a few of his able young men to the United States to learn modern physical chemistry. He explained that he could not do this because the necessary foreign currency was not available. Still other speakers expressed the belief that the scientific horizon should be broadened so that all countries may make contributions to scientific knowledge. The sending of students to scientifically powerful nations and of professors to the scientifically weaker ones would be important in alleviating the inequalities which now exist.

After an extended discussion it seemed generally agreed that UNESCO should have funds at its disposal for promoting the exchange of personnel and that these funds should be used as far as possible to raise the scientific level throughout the world. It was not meant to imply that UNESCO should displace those organizations now performing these functions, but that it should supplement them and have a broader horizon as its objective. It was felt almost universally that a beginning should be made at once even though that beginning must necessarily be a modest one, and the writer expressed the hope that the American Chemical Society might make a small donation, perhaps only $25,000, to initiate the program of exchanging chemists between the various countries.

With regard to international institutes several types were mentioned as possibilities: astronomical observatories, institutes for the study of nutrition and of natural resources in the various regions of the world, institutes for the study of epidemics and endemics, an institute for applied mathematics, institutes for the study of meteorology.

The International Astronomical Union had already proposed to Dr. Huxley the establishment of an international observatory by UNESCO. In this case the Union might well be called upon to administer such an observatory, and in some other instances existing International Unions might provide administration. However, it was strongly felt that such international institutes should bear the UNESCO name so that citizens of each of the countries would feel free to use them, not as guests but as participants.

Speakers from certain countries expressed skepticism concerning these proposals. The main reasons advanced for this attitude were difficulty of obtaining funds, shortage of scientific personnel, and belief that enough institutes are already in existence. It seems to the writer that most of these arguments are trivial and even though one admits that such a program could not be implemented until funds are available, plans should be drawn immediately. The majority of those present seemed to concur in this point of view.

As a result of this discussion it was recommended that the Preparatory Commission be requested to draw plans for international institutes of one or more of the above types, choosing the ones which seem most feasible after careful consideration of all of the factors involved.

## AGREEMENTS REACHED

It seems very evident from all discussions held at this meeting that strong international organizations are desired by most countries, at least by the scientists of these countries, and that any nation which takes real initiative along these lines would have a substantial following. While there are many things which can be accomplished by a weak and small organization, such as providing better contacts, providing mechanisms for exchanges of periodicals, even providing mechanisms for obtaining foreign currency, there are others which can be accomplished only if a strong organization is established and if sufficient money is available. It may be necessary to temporize and to do those things first which can be done with the facilities at hand, but the writer firmly believes that UNESCO should be provided with a sound and thorough organization competent to handle large problems and that we should all bend our efforts in the direction of obtaining proper support by the United States Government and of furnishing men who have both the ideals and the organizational ability for the tasks at hand.

The priorities agreed upon were realistic. The establishment of a sound organization and the performance of such tasks as do not require a large expenditure of funds must, necessarily, come first. But plans should be made for a more far-reaching program and the first steps taken to secure proper support by the various governments.

There are some things which we can do as citizens: educate our fellow citizens on the great desirability of a strong international scientific organization. There are other things which we can do as members of the American Chemical Society. The proposal that the Society make a small donation, say $25,000, to start exchanges of chemists will be placed before the Council and the Board of Directors at the Chicago meeting. This matter should be given the freest and fullest discussion, and it is hoped that the Society will see fit to make a modest contribution which might have far-reaching consequences in promoting international cooperation.

The Preparatory Commission meets in London during July and will consider recommendations made by the committees of the nine divisions. Thereafter the secretariat will draw formal plans for the establishment of UNESCO which we hope will take place during the month of November in Paris. It behooves all of us to watch developments and to be sure that any United States representatives represent the point of view of those who believe in international cooperation. Finally, a word of warning may be in order. Good administrators are rare, and most of them have good positions. A real personal sacrifice may be necessary on the part of those who are called to serve. Let us hope that some good administrators can be found for these tasks so important for the future of science and of humanity.

# The Atomic Energy Act of 1946 . . .

**The portions printed in italics are those added to the Senate Bill by the Senate-House Conference Committee. (Ed.)**

## DECLARATION OF POLICY

SECTION 1. (a) FINDINGS AND DECLARATION.—Research and experimentation in the field of nuclear chain reaction have attained the stage at which the release of atomic energy on a large scale is practical. The significance of the atomic bomb for military purposes is evident. The effect of the use of atomic energy for civilian purposes upon the social, economic, and political structures of today cannot now be determined. It is a field in which unknown factors are involved. Therefore, any legislation will necessarily be subject to revision from time to time. It is reasonable to anticipate, however, that tapping this new source of energy will cause profound changes in our present way of life. Accordingly, it is hereby declared to be the policy of the people of the United States that, subject at all times to the paramount objective of assuring the common defense and security, the development and utilization of atomic energy shall, so far as practicable, be directed toward improving the public welfare, increasing the standard of living, strengthening free competition in private enterprise, and promoting world peace.

(b) PURPOSE OF ACT.—It is the purpose of this Act to effectute the policies set out in section 1 (a) by providing, among others, for the following major programs relating to atomic energy:

(1) A program of assisting and fostering private research and development to encourage maximum scientific progress;

(2) A program for the control of scientific and technical information which will permit the dissemination of such information to encourage scientific progress, and for the sharing on a reciprocal basis of information concerning the practical industrial application of atomic energy as soon as effective and enforceable safeguards against its use for destructive purposes can be devised;

(3) A program of federally conducted research and development to assure the Government of adequate scientific and technical accomplishment;

(4) A program for Government control of the production, ownership, and use of fissionable material to assure the common defense and security and to insure the broadest possible exploitation of the field; and

(5) A program of administration which will be consistent with the foregoing policies and with international arrangements made by the United States, and which will enable the Congress to be currently informed so as to take further legislative action as may hereafter be appropriate.

## ORGANIZATION

SEC. 2 (a) ATOMIC ENERGY COMMISSION.—

(1) There is hereby established an Atomic Energy Commission (herein called the Commission), which shall be composed of five members. Three members shall constitute a quorum of the Commission. The President shall designate one member as Chairman of the Commission.

(2) Members of the Commission shall be appointed by the President, by and with the advice and consent of the Senate. In submitting any nomination to the Senate, the President shall set forth the experience and the qualifications of the nominee. The term of office of each member of the Commission taking office prior to the expiration of two years after the date of enactment of this Act shall expire upon the expiration of such two years. The term of office of each member of the Commission taking office after the expiration of two years from the date of enactment of this Act shall be five years, except that (A) the terms of office of the members first taking office after the expiration of two years from the date of enactment of this Act shall expire, as designated by the President at the time of appointment, one at the end of three years, one at the end of four years, one at the end of five years, one at the end of six years, and one at the end of seven years, after the date of enactment of this Act; and (B) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed, shall be appointed for the remainder of such term. Any member of the Commission may be removed by the President for inefficiency, neglect of duty, or malfeasance in office. Each member, except the Chairman, shall receive compensation at the rate of $15,000 per annum; and the Chairman shall receive compensation at the rate of $17,500 per annum. No member of the Commission shall engage in any other business, vocation, or employment than that of serving as a member of the Commission.

(3) The principal office of the Commission shall be in the District of Columbia, but the Commission or any duly authorized representative may exercise any or all of its powers in any place. The Commission shall hold such meetings, conduct such hearings, and receive such reports as may be necessary to enable it to carry out the provisions of this Act.

(4) There are hereby established within the Commission—

(A) a General Manager, who shall discharge such of the administrative and executive functions of the Commission as the Commission may direct. The General Manager shall be appointed by the President by and with the advice and consent of the Senate, and shall receive compensation at the rate of $15,000 per annum. The Commission may make recommendations to the President with respect to the appointment or removal of the General Manager.

(B) a Division of Research, a Division of Production, a Division of Engineering, and a Division of Military Application. Each division shall be under the direction of a Director who shall be appointed by the Commission, and shall receive compensation at the rate of $14,000 per annum. *The Director of the Division of Military Application shall be a member of the armed forces.* The Commission shall require each such division to exercise such of the Commission's powers under this Act as the Commission may determine, except that the authority granted under section 3 (a) of this Act shall not be exercised by the Division of Research.

(b) GENERAL ADVISORY COMMITTEE.—There shall be a General Advisory Committee to advise the Commission on scientific and technical matters relating to materials, production, and research and development, to be composed of nine members, who shall be appointed from civilian life by the President. Each member shall hold office for a term of six years, except that (1) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed, shall be appointed for the remainder of such term; and (2) the terms of office of the members first taking office after the date of the enactment of this Act shall expire, as designated by the President at the time of appointment, three at the end of two years, three at the end of four years, and three at the end of six years, after the date of the enactment of this Act. The Committee shall designate one of its own members as Chairman. The Committee shall meet at least four times in every calendar year. The members of the Committee shall receive a per diem compensation of $50 for each day spent in meetings or conferences, and all members shall receive their necessary traveling or other expenses while engaged in the work of the Committee.

(c) MILITARY LIAISON COMMITTEE.—There shall be a Military Liaison Committee consisting of representatives of the Departments of War and Navy, detailed or assigned thereto, without additional compensation, by the Secretaries of War and Navy in such number as they may determine. The Commission shall advise and consult with the Committee on all atomic energy matters which the Committee deems to relate to military applications, including the development, manufacture, use, and storage of bombs, the allocation of fissionable material for military research, and the control of information relating to the manufacture or utilization of atomic weapons. The Commission shall keep the Committee fully informed of all such matters before it and the Committee shall keep the Commission fully informed of all atomic energy activities of the War and Navy Departments. The Committee shall have authority to make written recommendations to the Commission on matters relating to military applications from time to time as it may deem appropriate. If the Committee at any time concludes that any action, proposed action, or failure to act of the Commission on such matters is adverse to the responsibilities of the Departments of War or Navy, derived from the Constitution, laws, and treaties, the Committee may refer such action, proposed action, or failure to act to the Secretaries of War and Navy. If either Secretary concurs, he may refer the matter to the President, whose decision shall be final.

*(d)* APPOINTMENT OF ARMY AND NAVY OFFICERS.—*Notwithstanding*

*the provisions of section 1222 of the Revised Statutes (U. S. C., 1940 edition, title 10, sec. 576), section 212 of the Act entitled "An Act making appropriations for the Legislative Branch of the Government for the fiscal year ending June 30, 1933, and for other purposes", approved June 30, 1932, as amended (U. S. C., 1940 edition, title 5, sec. 59a), section 2 of the Act entitled "An Act making appropriations for the legislative, executive, and judicial expenses of the Government for the fiscal year ending June thirtieth, eighteen hundred and ninety five, and for other purposes", approved July 31 1894, as amended (U. S. C., 1940 edition, title 5, sec. 62), or any other law, any active or retired officer of the Army or the Navy may serve as Director of the Division of Military Application established by subsection (a) (4) (B) of this section, without prejudice to his commissioned status as such officer. Any such officer serving as Director of the Division of Military Application shall receive, in addition to his pay from the United States as such officer, an amount equal to the difference between such pay and the compensation prescribed in subsection (a) (4) (B) of this section.*

## RESEARCH

SEC. 3. (a) RESEARCH ASSISTANCE.—The Commission is directed to exercise its powers in such manner as to insure the continued conduct of research and development activities in the fields specified below by private or public institutions or persons and to assist in the acquisition of an ever-expanding fund of theoretical and practical knowledge in such fields. To this end the Commission is authorized and directed to make arrangements (including contracts, agreements, and loans) for the conduct of research and development activities relating to—

(1) nuclear processes;

(2) the theory and production of atomic energy, including processes, materials, and devices related to such production;

(3) utilization of fissionable and radioactive materials for medical, biological, health, or military purposes;

(4) utilization of fissionable and radioactive materials and processes entailed in the production of such materials for all other purposes, including industrial uses; and

(5) the protection of health during research and production activities.

The Commission may make such arrangements without regard to the provisions of section 3709 of the Revised Statutes (U. S. C., title 41, sec. 5) upon certification by the Commission that such action is necessary in the interest of the common defense and security, or upon a showing that advertising is not reasonably practicable, and may make partial and advance payments under such arrangements, and may make available for use in connection therewith such of its equipment and facilities as it may deem desirable. Such arrangements shall contain such provisions to protect health, to minimize danger from explosion and other hazards to life or property, and to require the reporting and to permit the inspection of work performed thereunder, as the Commission may determine; but shall not contain any provisions or conditions which prevent the dissemination of scientific or technical information, except to the extent such dissemination is prohibited by law.

(b) RESEARCH BY THE COMMISSION.—The Commission is authorized and directed to conduct, through its own facilities, activities and studies of the types specified in subsection (a) above.

## PRODUCTION OF FISSIONABLE MATERIAL

SEC. 4. (a) DEFINITION.—As used in this Act, the term "produce", when used in relation to fissionable material, means to manufacture, produce, or refine fissionable material, as distinguished from source materials as defined in section 5 (b) (1), or to separate fissionable material from other substances in which such material may be contained or to produce new fissionable material.

(b) PROHIBITION.—It shall be unlawful for any person to own any facilities for the production of fissionable material or for any person to produce fissionable material, except to the extent authorized by subsection (c).

(c) OWNERSHIP AND OPERATION OF PRODUCTION FACILITIES.—

(1) OWNERSHIP OF PRODUCTION FACILITIES.—The Commission, *as agent of and on behalf of the United States,* shall be the exclusive owner of all facilities for the production of fissionable material other than facilities which (A) are useful in the conduct of research and development activities in the fields specified in section 3, and (B) do not, in the opinion of the Commission, have a potential production rate adequate to enable the operator of such facilities to produce within a reasonable period of time a sufficient quantity of fissionable material to produce an atomic bomb or any other atomic weapon.

(2) OPERATION OF THE COMMISSION'S PRODUCTION FACILITIES.—The Commission is authorized and directed to produce or to provide for the production of fissionable material in its own facilities. To the extent deemed necessary, the Commission is authorized to make, or to continue in effect, contracts with persons obligating them to produce fissionable material in facilities owned by the Commission. The Commission is also authorized to enter into research and development contracts authorizing the contractor to produce fissionable material in facilities owned by the Commission to the extent that the production of such fissionable material may be incident to the conduct of research and development activities under such contracts. Any contract entered into under this section shall contain provisions (A) prohibiting the contractor with the Commission from subcontracting any part of the work he is obligated to perform under the contract, *except as authorized by the Commission,* and (B) obligating the contractor to make such reports to the Commission as it may deem appropriate with respect to his activities under the contract, to submit to frequent inspection by employees of the Commission of all such activities, and to comply with all safety and security regulations which may be prescribed by the Commission. Any contract made under the provisions of this paragraph may be made without regard to the provisions of section 3709 of the Revised Statutes (U. S. C., title 41, sec. 5) upon certification by the Commission that such action is necessary in the interest of the common defense and security, or upon a showing that advertising is not reasonably practicable, and partial and advance payments may be made under such contracts. The President shall determine at least once each year the quantities of fissionable material to be produced under this paragraph.

(3) OPERATION OF OTHER PRODUCTION FACILITIES.—Fissionable material may be produced in the conduct of research and development activities in facilities which, under paragraph (1) above, are not required to be owned by the Commission.

(d) IRRADIATION OF MATERIALS.—For the purpose of increasing the supply of radioactive materials, the Commission *and persons lawfully producing or utilizing fissionable material are* authorized to expose materials of any kind to the radiation incident to the processes of producing or utilizing fissionable material.

(e) MANUFACTURE OF PRODUCTION FACILITIES.—Unless authorized by a license issued by the Commission, no person may manufacture, produce, transfer, or acquire any facilities for the production of fissionable material. Licenses shall be issued in accordance with such procedures as the Commission may by regulation establish and shall be issued in accordance with such standards and upon such conditions as will restrict the production and distribution of such facilities to effectuate the policies and purposes of this Act. Nothing in this section shall be deemed to require a license for such manufacture, production, transfer, or acquisition incident to or for the conduct of research or development activities in the United States of the types specified in section 3, or to prohibit the Commission from manufacturing or producing such facilities for its own use.

## CONTROL OF MATERIALS

SEC. 5. (a) FISSIONABLE MATERIALS.—

(1) DEFINITION.—As used in this Act, the term "fissionable material" means plutonium, uranium enriched in the isotope 235, any other material which the Commission determines to be capable of releasing substantial quantities of energy through nuclear chain reaction of the material, or any material artificially enriched by any of the foregoing; but does not include source materials, as defined in section 5 (b) (1).

(2) GOVERNMENT OWNERSHIP OF ALL FISSIONABLE MATERIAL.—All right, title, and interest within or under the jurisdiction of the United States, in or to any fissionable material, now or hereafter produced, shall be the property of the Commission, and shall be deemed to be vested in the Commission by virtue of this Act. Any person owning any interest in any fissionable material at the time of the enactment of this Act, or owning any interest in any material at the time when such material is hereafter determined to be a fissionable material, or who lawfully produces any fissionable material incident to privately financed research or development activities, shall be paid just compensation therefor. The Commission may, by action consistent with the provisions of paragraph (4) below, authorize any such person to

retain possession of such fissionable material, but no person shall have any title in or to any fissionable material.

(3) PROHIBITION.—It shall be unlawful for any person, after sixty days from the effective date of this Act to (A) possess or transfer any fissionable material, except as authorized by the Commission, or (B) export from or import into the United States any fissionable material, or (C) directly or indirectly engage in the production of any fissionable material outside of the United States.

(4) DISTRIBUTION OF FISSIONABLE MATERIAL.—Without prejudice to its continued ownership thereof, the Commission is authorized to distribute fissionable material *owned by it* with or without charge, to applicants requesting such material (A) for the conduct of research or development activities either independently or under contract or other arrangement with the Commission, (B) for use in medical therapy, or (C) for use pursuant to a license issued under the authority of section 7. Such material shall be distributed in such quantities and on such terms that no applicant will be enabled to obtain an amount sufficient to construct a bomb or other military weapon. The Commission is directed to distribute sufficient fissionable material to permit the conduct of widespread independent research and development activity, to the maximum extent practicable. In determining the quantities of fissionable material to be distributed, the Commission shall make such provisions for its own needs and for the conservation of fissionable material as it may determine to be necessary in the national interest for the future development of atomic energy. The Commission shall not distribute any material to any applicant, and shall recall any distributed material from any applicant, who is not equipped to observe or who fails to observe such safety standards to protect health and to minimize danger from explosion or other hazard to life or property as may be established by the Commission or who uses such material in violation of law or regulation of the Commission or in a manner other than as disclosed in the application therefor.

(5) The Commission is authorized to purchase or otherwise acquire any fissionable material or any interest therein outside the United States, or any interest in facilities for the production of fissionable material, or in real property on which such facilities are located, without regard to the provisions of section 3709 of the Revised Statutes (U. S. C., title 41, sec. 5) upon certification by the Commission that such action is necessary in the interest of the common defense and security, or upon a showing that advertising is not reasonably practicable, and partial and advance payments may be made under contracts for such purposes. The Commission is further authorized to take, requisition, or condemn, or otherwise acquire any interest in such facilities or real property, and just compensation shall be made thereof.

(b) SOURCE MATERIALS.—

(1) DEFINITION.—As used in this Act, the term "source material" means uranium, thorium, or any other material which is determined by the Commission, with the approval of the President, to be peculiarly essential to the production of fissionable materials; but includes ores only if they contain one or more of the foregoing materials in such concentration as the Commission may by regulation determine from time to time.

(2) LICENSE FOR TRANSFERS REQUIRED.—Unless authorized by a license issued by the Commission, no person may transfer or deliver, *receive possession of or title to, or export from the United States* any source material after removal from its place of deposit in nature, except that licenses shall not be required for quantities of source materials which, in the opinion of the Commission, are unimportant.

(3) ISSUANCE OF LICENSES.—The Commission shall establish such standards for the issuance, refusal, or revocation of licenses as it may deem necessary to assure adequate source materials for production, research, or development activities pursuant to this Act or to prevent the use of such materials in a manner inconsistent with the national welfare. Licenses shall be issued in accordance with such procedures as the Commission may by regulation establish.

(4) REPORTING.—The Commission is authorized to issue such regulations or orders requiring reports of ownership, possession, extraction, refining, shipment, or other handling of source materials as it may deem necessary, except that such reports shall not be required with respect to (A) any source material prior to removal from its place of deposit in nature, or (B) quantities of source materials which in the opinion of the Commission are unimportant or the reporting of which will discourage independent propecting for new deposits.

(5) ACQUISITION.—The Commission is authorized and directed to purchase, take, requisition, condemn, or otherwise acquire, supplies of source materials or any interest in real property containing deposits of source materials to the extent it deems necessary to effectuate the provisions of this Act. Any purchase made under this paragraph may be made without regard to the provisions of section 3709 of the Revised Statutes (U. S. C., title 41, sec. 5) upon certification by the Commission that such action is necessary in the interest of the common defense and security, or upon a showing that advertising is not reasonably practicable, and partial and advance payments may be made thereunder. The Commission may establish guaranteed prices for all source materials delivered to it within a specified time. Just compensation shall be made for any property taken, requisitioned, or condemned under this paragraph.

(6) EXPLORATION.—The Commission is authorized to conduct and enter into contracts for the conduct of exploratory operations, investigations, and inspections to determine the location, extent, mode of occurrence, use, or conditions of deposits or supplies of source materials, making just compensation for any damage or injury occasioned thereby. Such exploratory operations may be conducted only with the consent of the owner, but such investigations and inspections may be conducted with or without such consent.

(7) PUBLIC LANDS.—All uranium, thorium, and all other materials determined pursuant to paragraph (1) of this subsection to be peculiarly essential to the production of fissionable material, contained, in whatever concentration, in deposits in the public lands are hereby reserved for the use of the United States *subject to valid claims, rights or privileges existing on the date of the enactment of this Act: Provided, however,* That no *individual,* corporation, partnership, or association, which had any part, directly or indirectly, in the development of the atomic bomb project, may benefit by any location, entry, or settlement upon the public domain made after such *individual,* corporation, partnership, or association took part in such project, *if such individual, corporation, partnership, or association, by reason of having had such part in the development of the atomic bomb project, acquired confidential official information as to the existence of deposits of such uranium, thorium, or other materials in the specific lands upon which such location, entry, or settlement is made, and subsequent to the date of the enactment of this Act made such location, entry, or settlement or caused the same to be made for his, its, or their benefit.* The Secretary of the Interior shall cause to be inserted in every patent, conveyance, lease, permit, or other authorization hereafter granted to use the public lands or their mineral resources, under any of which there might result the extraction of any materials so reserved, a reservation to the United States of all such materials, whether or not of commercial value, together with the right of the United States through its authorized agents or representatives at any time to enter upon the land and prospect for, mine, and remove the same, making just compensation for any damage or injury occasioned thereby. Any lands so patented, conveyed, leased, or otherwise disposed of may be used, and any rights under any such permit or authorization may be exercised, as if no reservation of such materials had been made under this subsection; except that, when such use results in the extraction of any such material from the land in quantities which may not be transferred or delivered without a license under this subsection, such material shall be the property of the Commission and the Commission may require delivery of such material to it by any possessor thereof after such material has been separated as such from the ores in which it was contained. If the Commission requires the delivery of such material to it, it shall pay to the person mining or extracting the same, or to such other person as the Commission determines to be entitled thereto, such sums, including profits, as the Commission deems fair and reasonable for the discovery, mining, development, production, extraction, and other services performed with respect to such material prior to such delivery but such payment shall not include any amount on account of the value of such material before removal from its place of deposit in nature. If the Commission does not require delivery of such material to it, the reservation made pursuant to this paragraph shall be of no further force or effect.

(c) BYPRODUCT MATERIALS.—

(1) DEFINITION.—As used in this Act, the term "byproduct material" means any radioactive material (except fissionable material) yielded in or made radioactive by exposure to the radiation incident to the processes of producing or utilizing fissionable material.

(2) DISTRIBUTION.—The Commission is authorized to distribute, with or without charge, byproduct materials to applicants seeking such materials for research or development activity, medical therapy, industrial uses, or such other useful applications as may be developed. In distributing such materials, the Commission shall give preference to applicants proposing to use such materials in the conduct of research and development activity or medical therapy. The Commission shall

not distribute any byproduct materials to any applicant, and shall recall any distributed materials from any applicant, who is not equipped to observe or who fails to observe such safety standards to protect health as may be established by the Commission or who uses such materials in violation of law or regulation of the Commission or in a manner other than as disclosed in the application therefor.

(d) GENERAL PROVISIONS.—

*The Commission shall not—*

*(1) Distribute any fissionable material to (A) any person for a use which is not under or within the jurisdiction of the United States, (B) any foreign government, or (C) any person within the United States if, in the opinion of the Commission, the distribution of such fissionable material to such person would be inimical to the common defense and security.*

*(2) License any person to transfer or deliver, receive possession of or title to, or export from the United States any source material if, in the opinion of the Commission, the issuance of a license to such person for such purpose would be inimical to the common defense and security.*

*(3) The Commission shall establish by regulation a procedure by which any person who is dissatisfied with the distribution or refusal to distribute to him, or the recall from him, of any fissionable or byproduct materials or with the issuance, refusal, or revocation of a license to him for the transfer or receipt of source materials may obtain a review of such determination by a board of appeal consisting of three members appointed by the Commission. The Commission may in its discretion review and revise any decision of such board of appeal.*

## MILITARY APPLICATIONS OF ATOMIC ENERGY

SEC. 6. (a) AUTHORITY.—The Commission is authorized to—

(1) conduct experiments and do research and development work in the military application of atomic energy; and

(2) engage in the production of atomic bombs, atomic bomb parts, or other military weapons utilizing fissionable materials; except that such activities shall be carried on only to the extent that the express consent and direction of the President of the United States has been obtained, which consent and direction shall be obtained at least once each year.

The President from time to time may direct the Commission (1) to deliver such quantities of *fissionable materials or* weapons to the armed forces for such use as he deems necessary in the interest of national defense *or (2) to authorize the armed forces to manufacture, produce, or acquire any equipment or device utilizing fissionable material or atomic energy as a military weapon.*

(b) PROHIBITION.—It shall be unlawful for any person to manufacture, produce, transfer, or acquire any equipment or device utilizing fissionable material or atomic energy as a military weapon, except as may be authorized by the Commission. Nothing in this subsection shall be deemed to modify the provisions of section 4 of this Act, or to prohibit research activities in respect of military weapons, or to permit the export of any such equipment or device.

## UTILIZATION OF ATOMIC ENERGY

SEC. 7. (a) LICENSE REQUIRED.—It shall be unlawful, except as provided in sections 5 (a) (4) (A) or (B) or 6 (a), for any person to manufacture, produce, or export any equipment or device utilizing fissionable material or atomic energy or to utilize fissionable material or atomic energy with or without such equipment or device, except under and in accordance with a license issued by the Commission authorizing such manufacture, production, export, or utilization. No license may permit any such activity if fissionable material is produced incident to such activity, except as provided in sections 3 and 4. Nothing in this section shall be deemed to require a license for the conduct of research or development activities relating to the manufacture of such equipment or devices or the utilization of fissionable material or atomic energy, or for the manufacture or use of equipment or devices for medical therapy.

(b) REPORT TO CONGRESS.—Whenever in its opinion any industrial, commercial, or other nonmilitary use of fissionable material or atomic energy has been sufficiently developed to be of practical value, the Commission shall prepare a report to the President stating all the facts with respect to such use, the Commission's estimate of the social, political, economic, and international effects of such use and the Commission's recommendations for necessary or desirable supplemental legislation. The President shall then transmit this report to the Congress together with his recommendations. No license for any manufacture, production, export, or use shall be issued by the Commission under this section until after (1) a report with respect to such manufacture, production, export, or use has been filed with the Congress; and (2) a period of ninety days in which the Congress was in session has elapsed after the report has been so filed. In computing such period of ninety days, there shall be excluded the days on which either House is not in session because of an adjournment of more than three days.

(c) ISSUANCE OF LICENSES.—After such ninety-day period, unless hereafter prohibited by law, the Commission may license such manufacture, production, export, or use in accordance with such procedures and subject to such conditions as it may be regulation establish to effectuate the provisions of this Act. The Commission is authorized and directed to issue licenses on a nonexclusive basis and to supply to the extent available appropriate quantities of fissionable material to licensees (1) whose proposed activities will serve some useful purpose proportionate to the quantities of fissionable material to be consumed; (2) who are equipped to observe such safety standards to protect health and to minimize danger from explosion or other hazard to life or property as the Commission may establish; and (3) who agree to make available to the Commission such technical information and data concerning their activities pursuant to such licenses as the Commission may determine necessary to encourage similiar activities by as many licensees as possible. Each such license shall be issued for a specified period, shall be revocable at any time by the Commission in accordance with such procedures as the Commission may establish, and may be renewed upon the expiration of such period. Where activities under any license might serve to maintain or to foster the growth of monopoly, restraint of trade, unlawful competition, or other trade position inimical to the entry of new, freely competitive enterprises in the field, the Commission is authorized and directed to refuse to issue such license or to establish such conditions to prevent these results as the Commission, in consultation with the Attorney General, may determine. The Commission shall report promptly to the Attorney General any information it may have with respect to any utilization of fissionable material or atomic energy which appears to have these results. No license may be given to any person for activities which are not under or within the jurisdiction of the United *States,* to any foreign government, *or to any person within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security.*

(d) BYPRODUCT POWER.—If energy which may be utilized is produced in the production of fissionable material, such energy may be used by the Commission, transferred to other Government agencies, or sold to public or private utilities under contracts providing for reasonable resale prices.

## INTERNATIONAL ARRANGEMENTS

SEC. 8. (a) DEFINITION.—As used in this Act, the term "international arrangement" shall mean any treaty approved by the Senate or international agreement *hereafter* approved by the Congress, during the time such treaty or agreement is in full force and effect.

(b) EFFECT OF INTERNATIONAL ARRANGEMENTS.—Any provision of this Act or any action of the Commission to the extent that it conflicts with the provisions of any international arrangement made after the date of enactment of this Act shall be deemed to be of no further force or effect.

(c) POLICIES CONTAINED IN INTERNATIONAL ARRANGEMENTS.—In the performance of its functions under this Act, the Commission shall give maximum effect to the policies contained in any such international arrangement.

## PROPERTY OF THE COMMISSION

SEC. 9. (a) The President shall direct the transfer to the Commission of all interests owned by the United States or any Government agency in the following property:

(1) All fissionable material; all atomic weapons and parts thereof; all facilities, equipment, and materials for the processing, production, or utilization of fissionable material or atomic energy; all processes and technical information of any kind, and the source thereof (including data, drawings, specifications, patents, patent applications, and other sources) relating to the processing, production, or utilization of fissionable material or atomic energy; and all contracts, agreements, leases, patents, applications for patents, inventions and discoveries (whether patented or unpatented), and other rights of any kind concerning any such items;

(2) All facilities, equipment, and materials, devoted primarily to atomic energy research and development; and

(3) Such other property owned by or in the custody or control of the Manhattan Engineer District or other Government agencies as the President may determine.

(b) In order to render financial assistance to those States and localities in which the activities of the Commission are carried on and in which the Commission has acquired property previously subject to State and local taxation, the Commission is authorized to make payments to State and local governments in lieu of property taxes. Such payments may be in the amounts, at the times, and upon the terms the Commission deems appropriate, but the Commission shall be guided by the policy of not making payments in excess of the taxes which would have been payable for such property in the condition in which it was acquired, except in cases where special burdens have been cast upon the State or local government by activities of the Commission, the Manhattan Engineer District or their agents. In any such case, any benefit accruing to the State or local government by reason of such activities shall be considered in determining the amount of the payment. The Commission, and the property, activities, and income of the Commission, are hereby expressly exempted from taxation in any manner or form by any State, county, municipality, or any subdivision thereof.

## CONTROL OF INFORMATION

SEC. 10. (a) POLICY.—It shall be the policy of the Commission to control the dissemination of restricted data in such a manner as to assure the common defense and security. Consistent with such policy, the Commission shall be guided by the following principles:

*(1) That until Congress declares by joint resolution that effective and enforceable international safeguards against the use of atomic energy for destructive purposes have been established, there shall be no exchange of information with other nations with respect to the use of atomic energy for industrial purposes; and*

(2) That the dissemination of scientific and technical information relating to atomic energy should be permitted and encouraged so as to provide that free interchange of ideas and criticisms which is essential to scientific progress.

*(b)* RESTRICTIONS.—

(1) The term "restricted data" as used in this section means all data concerning the manufacture or utilization of atomic weapons, the production of fissionable material, or the use of fissionable material in the production of power, but shall not include any data which the Commission from time to time determines may be published without adversely affecting the common defense and security.

(2) Whoever, lawfully or unlawfully, having possession of, access to, control over, or being entrusted with, any document, writing, sketch, photograph, plan, model, instrument, appliance, note or information involving or incorporating restricted data—

(A) communicates, transmits, or discloses the same to any individual or person, or attempts or conspires to do any of the foregoing, with intent to injure the United States or with intent to secure an advantage to any foreign nation, upon conviction thereof, shall be punished by *death or imprisonment for life (but the penalty of death or imprisonment for life may be imposed only upon recommendation of the jury and only in cases where the offense was committed with intent to injure the United States); or by* a fine of not more than $20,000 or imprisonment for not more than twenty years, or both;

(B) communicates, transmits, or discloses the same to any individual or person, or attempts or conspires to do any of the foregoing, with reason to believe such data will be utilized to injure the United States or to secure an advantage to any foreign nation, shall, upon conviction, be punished by a fine of not more than $10,000 or imprisonment for not more than ten years, or both.

(3) Whoever, with intent to injure the United States or with intent to secure an advantage to any foreign nation, acquires or attempts or conspires to acquire any document, writing, sketch, photograph, plan, model, instrument, appliance, note or information involving or incorporating restricted data shall, upon conviction thereof, be punished *by death or imprisonment for life (but the penalty of death or imprisonment for life may be imposed only upon recommendation of the jury and only in cases where the offense was committed with intent to injure the United States); or by* a fine of not more than $20,000 or imprisonment for not more than twenty years, or both.

(4) Whoever, with intent to injure the United States or with intent to secure an advantage to any foreign nation, removes, conceals, tampers with, alters, mutilates, or destroys any document, writing, sketch, photograph, plan, model, instrument, appliance, or note involving or incorporating restricted data and used by any individual or person in connection with the production of fissionable material, or research or development relating to atomic energy, conducted by the United States, or financed in whole or in part by Federal funds, or conducted with the aid of fissionable material, shall be punished by *death or imprisonment for life (but the penalty of death or imprisonment for life may be imposed only upon recommendation of the jury and only in cases where the offense was committed with intent to injure the United States);* or by a fine of not more than $20,000 or imprisonment for not more than twenty years or both.

*(5) (A) No person shall be prosecuted for any violation under this section unless and until the Attorney General of the United States has advised the Commission with respect to such prosecution and no such prosecution shall be commenced except upon the express direction of the Attorney General of the United States.*

*(B) (i) No arrangement shall be made under Section 3, no contract shall be made or continued in effect under section 4, and no license shall be issued under section 4 (e) or 7, unless the person with whom such arrangement is made, the contractor or prospective contractor, or the prospective licensee agrees in writing not to permit any individual to have access to restricted data until the Federal Bureau of Investigation shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense or security.*

*(ii) Except as authorized by the Commission in case of emergency, no individual shall be employed by the Commission until the Federal Bureau of Investigation shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual.*

*(iii) Notwithstanding the provisions of subparagraphs (i) and (ii), during such period of time after the enactment of this Act as may be necessary to make the investigation, report, and determination required by such paragraphs, (a) any individual who was permitted access to restricted data by the Manhattan Engineer District may be permitted access to restricted data and (b) the Commission may employ any individual who was employed by the Manhattan Engineer District.*

*(iv) To protect against the unlawful dissemination of restricted data and to safeguard facilities, equipment, materials, and other property of the Comission, the President shall have authority to utilize the services of any Government agency to the extent he may deem necessary or desirable.*

*(C) All violations of this Act shall be investigated by the Federal Bureau of Investigation of the Department of Justice.*

(6) This section shall not exclude the applicable provisions of any other laws, except that no Government agency shall take any action under such other laws inconsistent with the provisions of this section.

*(c)* INSPECTIONS, RECORDS, AND REPORTS.—The Commission is—

(1) authorized by regulation or order to require such reports and the keeping of such records with respect to, and to provide for such inspections of, activities and studies of types specified in section 3 and of activities under licenses issued pursuant to section 7 as may be necessary to effectuate the purposes of this Act;

(2) authorized and directed by regulation or order to require regular reports and records with respect to, and to provide for frequent inspections of, the production of fissionable material in the conduct of research and development activities.

## PATENTS AND INVENTIONS

SEC. 11. (a) PRODUCTION AND MILITARY UTILIZATION.

(1) No patent shall hereafter be granted for any invention or discovery which is useful solely in the production of fissionable material or in the utilization of fissionable material or atomic energy for a military weapon. Any patent granted for any such invention or discovery is hereby revoked, and just compensation shall be made therefor.

(2) No patent hereafter granted shall confer any rights with respect to any invention or discovery to the extent that such invention or discovery is used in he production of fissionable material or in the utilization of fissionable material or atomic energy for a military weapon. Any rights conferred by any patent heretofore granted for any invention or discovery are hereby revoked to the extent that such invention or discovery is so used, and just compensation shall be made therefor.

(3) Any person who has made or hereafter makes any invention or discovery useful in the production of fissionable material or in the utilization of fissionable material or atomic energy for a military weapon shall file with the Commission a report containing a complete description thereof, unless such invention or discovery is described in an application for a patent filed in the Patent Office by such person within the time required for the filing of such report. The report covering any such invention or discovery shall be filed on or before whichever of the following is the latest: (A) The sixtieth day after the date of enactment of this Act; (B) the sixtieth day after the completion of such invention or discovery; or (C) the sixtieth day after such person first discovers or first has reason to believe that such invention or discovery is useful in such production or utilization.

(b) USE OF INVENTIONS FOR RESEARCH.—No patent hereafter granted shall confer any rights with respect to any invention or discovery to the extent that such invention or discovery is used in the conduct of research or development activities in the fields specified in Section 3. Any rights conferred by any patent heretofore granted for any invention or discovery are hereby revoked to the extent that such invention or discovery is so used, and just compensation shall be made therefor.

(c) NONMILITARY UTILIZATION.—

(1) It shall be the duty of the Commission to declare any patent to be affected with the public interest if (A) the invention or discovery covered by the patent utilizes or is essential in the utilization of fissionable material or atomic energy; and (B) the licensing of such invention or discovery under this subsection is necessary to effectuate the policies and purposes of this Act.

(2) Whenever any patent has been declared, pursuant to paragraph (1), to be affected with the public interest

(A) The Commission is hereby licensed to use the invention or discovery covered by such patent in performing any of its powers under this Act; and

(B) Any person to whom a license has been issued under section 7 is hereby licensed to use the invention or discovery covered by such patent to the extent such invention or discovery is used by him in carrying on the activities authorized by his license under section 7.

The owner of the patent shall be entitled to a reasonable royalty fee for any use of an invention or discovery licensed by this subsection. Such royalty fee may be agreed upon by such owner and the licensee, or in the absence of such agreement shall be determined by the Commission.

(3) No court shall have jurisdiction or power to stay, restrain, or otherwise enjoin the use of any invention or discovery by a licensee, to the extent that such use is licensed by paragraph (2) above, on the ground of infringement of any patent. If in any action for infringement against such licensee the court shall determine that the defendant is exercising such license, the measure of damages shall be the royalty fee determined pursant to this section, together with such costs, interest, and reasonable attorney's fee as may be fixed by he court. If no royalty fee has been determined, the court shall stay the proceeding until the royalty fee is determined pursant to this section. If any such licensee shall fail to pay such royalty fee, the patentee may bring an action in any court of competent jurisdiction for such royalty fee, together with such costs, interest, and reasonable attorney's fees as may be fixed by the court.

(d) ACQUISITION OF PATENTS.—The Commission is authorized to purchase, or to take, requisition, or condemn, and make just compensation for, (1) any invention or discovery which is useful in the production of fissionable material or in the utilization of fissionable material or atomic energy for a military weapon, or which utilizes or is essential in the utilization of fissionable material or atomic energy, or (2) any patent or patent application covering any such invention or discovery. The Commissioner of Patents shall notify the Commission of all applications for patents heretofore or hereafter filed which in his opinion disclose such inventions or discoveries and shall provide the Commission access to all such applications.

(e) COMPENSATION AWARDS, AND ROYALTIES.

(1) PATENT COMPENSATION BOARD.—The Commission shall designate a Patent Compensation Board, consisting of two or more employees of the Commission, to consider applications under this subsection.

(2) ELIGIBILITY.

(A) Any owner of a patent licensed under subsection (c) (2) or any licensee thereunder may make application to the Commission for the determination of a reasonable royalty fee in accordance with such procedures as it by regulation may establish.

(B) Any person seeking to obtain the just compensation provided in subsections (a), (b), or (d) shall make application therefor to the Commission in accordance with such procedures as it may by regulation establish.

(C) Any person making any invention or discovery useful in the production of fissionable material or in the utilization of fissionable material or atomic energy for a military weapon who is not entitled to compensation therefor under subsection (a) and who has complied with subsection (a) (3) above may make application to the Commission for, and the Commission may grant, an award.

(D) Any person making application under this subsection shall have the right to be represented by counsel.

(3) STANDARDS.

(A) In determining such reasonable royalty fee, the Commission shall take into consideration any defense, general or special, that might be pleaded by a defendant in an action for infringement, the extent to which, if any, such patent was developed through federally financed research, the degree of utility, novelty, and importance of the invention or discovery, and may consider the cost to the owner of the patent of developing such invention or discovery or acquiring such patent.

(B) In determining what constitutes just compensation under subsection (a), (b), or (d) above, the Commission shall take into account the considerations set forth in paragraph (A) above, and the actual use of such invention or discovery, and may determine that such compensation be paid in periodic payments or in a lump sum.

(C) In determining the amount of any award under paragraph (2) (C) of this subsection, the Commission shall take into account the considerations set forth in paragraph (A) above, and the actual use of such invention or discovery. Awards so made may be paid by the Commission in periodic payments or in a lump sum.

(4) JUDICIAL REVIEW. Any person aggrieved by any determination of the Commission of an award or of a reasonable royalty fee may obtain a review of such determination in the Court of Appeals for the District of Columbia by filing in such court, within thirty days after notice of such determination, a written petition praying that such determination be set aside. A copy of such petition shall be forthwith served upon the Commission and thereupon the Commission shall file with the court a certified transcript of the entire record in the proceeding, including the findings and conclusions upon which the determination was based. Upon the filing of such transcript the court shall have exclusive jurisdiction upon the record certified to it to affirm the determination in its entirety or set it aside and remand it to the Commission for further proceedings. The findings of the Commission as to the facts, if supported by substantial evidence, shall be conclusive. The court's judgment shall be final, subject, however, to review by the Supreme Court of the United States, upon writ of certiorari on petition therefor under section 240 of the Judicial Code (U. S. C., title 28, sec. 347), by the Commission or any party to the court proceeding.

## GENERAL AUTHORITY

SEC. 12. (a) In the performance of its functions the Commission is authorized to—

(1) establish advisory boards to advise with and make recommendations to the Commission on legislation, policies, administration, research, and other matters;

(2) establish by regulation or order such standards and instructions to govern the possession and use of fissionable and by-product materials as the Commission may deem necessary or desirable to protect health or to minimize danger from explosions and other hazards to life or property;

(3) make such studies and investigations, obtain such information, and hold such hearings as the Commission may deem necessary or proper to assist it in exercising any authority provided in this Act, or in the administration or enforcement of this Act, or any regulations or orders issued thereunder. For such purposes the Commission is authorized to administer oaths and affirmations, and by subpena to require any person to appear and testify, or to appear and produce documents, or both, at any designated place. No person shall be excused from complying with any requirements under this paragraph because of his privilege against self-incrimination, but the immunity provisions of the Compulsory Testimony Act of February 11, 1893 (U. S. C., title 49, sec. 46), shall apply with respect to any individual who specifically claims such privilege. Witnesses subpenaed under this

subsection shall be paid the same fees and mileage as are paid witnesses in the district courts of the United States;

(4) appoint and fix the compensation of such officers and employees as may be necessary to carry out the functions of the Commission. Such officers and employees shall be appointed in accordance with the civil-service laws and their compensation fixed in accordance with the Classification Act of 1923, as amended, except that to the extent the Commission deems such action necessary to the discharge of its responsibilities, personnel may be employed and their compensation fixed without regard to such laws. The Commission shall make adequate provision for administrative review of any determination to dismiss any employee;

(5) acquire such materials, property, equipment, and facilities, establish or construct such buildings and facilities, and modify such buildings and facilities from time to time as it may deem necessary, and construct, acquire, provide, or arrange for such facilities and services (at project sites where such facilities and services are not available) for the housing, health, safety, welfare, and recreation of personnel employed by the Commission as it may deem necessary;

(6) with the consent of the agency concerned, utilize or employ the services or personnel of any Government agency or any State or local government, or voluntary or uncompensated personnel, to perform such functions on its behalf as may appear desirable;

(7) acquire, purchase, lease, and hold real and personal property as agent of and on behalf of the United States and to sell, lease, grant, and dispose of such real and personal property as provided in this *Act; and*

*(8)* without regard to the provisions of the Surplus Property Act of 1944 or any other law, make such disposition as it may deem desirable of (A) radio-active materials, and (B) any other property the special disposition of which is, in the opinion of the Commission, in the interest of the national security.

(b) SECURITY.—The President may, in advance, exempt any specific action of the Commission in a particular matter from the provisions of law relating to contracts whenever he determines that such action is essential in the interest of the common defense and security.

(c) ADVISORY COMMITTEES.—The members of the General Advisory Committee established pursuant to section 2 (b) and the members of advisory boards established pursuant to subsection (a) (1) of this section may serve as such without regard to the provisions of sections 109 and 113 of the Criminal Code (18 U. S. C., secs. 198 and 203) or section 19 (e) of the Contract Settlement Act of 1944, except insofar as such sections may prohibit any such member from receiving compensation in respect of any particular matter which directly involves the Commission or in which the Commission is directly interested.

## COMPENSATION FOR PRIVATE PROPERTY ACQUIRED

SEC. 13. (a) The United States shall make just compensation for any property or interests therein taken or requisitioned pursuant to sections 5 and 11. The Commission shall determine such compensation. If the compensation so determined is unsatisfactory to the person entitled thereto, such person shall be paid 50 per centum of the amount so determined, and shall be entitled to sue the United States in the Court of Claims or in any district court of the United States in the manner provided by sections 24 (20) and 145 of the Judicial Code to recover such further sum as added to said 50 per centum will make up such amount as will be just compensation.

(b) In the exercise of the rights of eminent domain and condemnation, proceedings may be instituted under the Act of August 1, 1888 (U. S. C., title 40, sec. 257), or any other applicable Federal statute. Upon or after the filing of the condemnation petition, immediate possession may be taken and the property may be occupied, used, and improved for the purposes of this Act, notwithstanding any other law. Real property acquired by purchase, donation, or other means of transfer may also be occupied, used, and improved for the purposes of this Act, prior to approval of title by the Attorney General.

## *JUDICIAL REVIEW AND ADMINISTRATIVE PROCEDURE*

SEC. *14. (a) Notwithstanding the provisions of section 12 of the Administrative Procedure Act (Public Law 404, Seventy-ninth Congress, approved June 11, 1946) which provide when such Act shall take effect, section 10 of such Act (relating to judicial review) shall be applicable, upon the enactment of this Act, to any agency action under the authority of this Act or by any agency created by or under the provisions of this Act.*

*(b) Except as provided in subsection (a), no provision of this Act shall be held to supersede or modify the provisions of the Administrative Procedure Act.*

*(c) As used in this section the terms "agency action" and "agency" shall have the same meaning as is assigned to such terms in the Administrative Procedure Act.*

## JOINT COMMITTEE ON ATOMIC ENERGY

SEC. *15.* (a) There is hereby estbalished a Joint Committee on Atomic Energy to be composed of nine Members of the Senate to be appointed by the President of the Senate, and nine Members of the House of Representatives to be appointed by the Speaker of the House of Representatives. In each instance not more than five members shall be members of the same political party.

(b) The joint committee shall make continuing studies of the activities of the Atomic Energy Commission and of problems relating to the development, use, and control of atomic energy. The Commission shall keep the joint committee fully and currently informed with respect to the Commission's activities. All bills, resolutions, and other matters in the Senate or the House of Representatives relating primarily to the Commission or to the development, use, or control of atomic energy shall be referred to the joint committee. The members of the joint committee who are Members of the Senate shall from time to time report to the Senate, and the members of the joint committee who are Members of the House of Representatives shall from time to time report to the House, by bill or otherwise, their recommendations with respect to matters within the jurisdiction of their respective Houses which are (1) referred to the joint committee or (2) otherwise within the jurisdiction of the joint committee.

(c) Vacancies in the membership of the joint committee shall not affect the power of the remaining members to execute the functions of the joint committee, and shall be filled in the same manner as in the case of the original selection. The joint committee shall select a chairman and a vice chairman from among its members.

(d) The joint committee, or any duly authorized subcommittee thereof, is authorized to hold such hearings, to sit and act at such places and times, to require, by subpena or otherwise, the attendance of such witnesses and the production of such books, papers, and documents, to administer such oaths, to take such testimony, to procure such printing and binding, and to make such expenditures as it deems advisable. The cost of stenographic services to report such hearings shall not be in excess of 25 cents per hundred words. The provisions of sections 102 to 104, inclusive, of the Revised Statutes shall apply in case of any failure of any witness to comply with a subpena or to testify when summoned under authority of this section.

(e) The joint committee is empowered to appoint and fix the compensation of such experts, consultants, technicians, and clerical and stenographic assistants as it deems necessary and advisable, but the compensation so fixed shall not exceed the compensation prescribed under the Classification Act of 1923, as amended, for comparable duties. The committee is authorized to utilize the services, information, facilities, and personnel of the departments and establishments of the Government.

## ENFORCEMENT

SEC. *16.* (a) Whoever willfully violates, attempts to violate, or conspires to violate, any provision of sections 4 (b), 4 (e), 5 (a) (3), or 6 (b) shall, upon conviction thereof, be punished by a fine of not more than $10,000 or by imprisonment for not more than five years, or both, except that whoever commits such an offense with intent to injure the United States or with intent to secure an advantage to any foreign nation shall, upon conviction thereof, be punished by *death or imprisonment for life (but the penalty of death or imprisonment for life may be imposed only upon recommendation of the jury and only in cases where the offense was committed with intent to injure the United States); or by* a fine of not more than $20,000 or by imprisonment for not more than twenty years, or both.

(b) Whoever willfully violates, attempts to violate, or conspires to violate, any provision of this Act other than those specified in subsection (a) and other than section 10 *(b)*, or of any regulation or order prescribed or issued under sections 5 (b) (4), 10 (c), or 12 (a) (2), shall, upon conviction thereof, be punished by a fine of not more than $5,000 or by imprisonment for not more than two years, or both,

except that whoever commits such an offense with intent to injure the United States or with intent to secure an advantage to any foreign nation shall, upon conviction thereof, be punished by a fine of not more than $20,000 or by imprisonment for not more than twenty years, or both.

(c) Whenever in the judgment of the Commission any person has engaged or is about to engage in any acts or practices which constitute or will constitute a violation of any provision of this Act, or any regulation or order issued thereunder, it may make application to the appropriate court for an order enjoining such acts or practices, or for an order enforcing compliance with such provision, and upon a showing by the Commission that such person has engaged or is about to engage in any such acts or practices a permanent or temporary injunction, restraining order, or other order *may* be granted.

(d) In case of failure or refusal to obey a subpena served upon any person pursuant to section 12 (a) (3), the district court for any district in which such person is found or resides or transacts business, upon application by the Commission, shall have jurisdiction to issue an order requiring such person to appear and give testimony or to appear and produce documents, or both, in accordance with the subpena; and any failure to obey such order of the court may be punished by such court as a contempt thereof.

**REPORTS**

SEC. *17*. The Commission shall submit to the Congress, in January and July of each year, a report concerning the activities of the Commission. The Commission shall include in such report, and shall at such other times as it deems desirable submit to the Congress, such recommendations for additional legislation as the Commission deems necessary or desirable.

**DEFINITIONS**

SEC. *18*. As used in this Act—

(a) The term "atomic energy" shall be construed to mean all forms of energy released in the course of or as a result of nuclear fission or nuclear transformation.

(b) The term "Government agency" means any executive department, commission, independent establishment, corporation wholly or partly owned by the United States which is an instrumentality of the United States, board, bureau, division, service, office, officer, authority, administration, or other establishment, in the executive branch of the Government.

(c) The term "person" means any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, the United States or any agency thereof, any government other than the United States, any political subdivision of any such government, and any legal successor, representative, agent, or agency of the foregoing, or other entity, but shall not include the Commission or officers or employees of the Commission in the exercise of duly authorized functions.

(d) The term "United States," when used in a geographical sense, includes all Territories and possessions of the United States and the *Canal Zone*.

(e) The term "research and development" means theoretical analysis, exploration, and experimentation, and the extension of investigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials, and processes.

(f) The term "equipment or device utilizing fissionable material or atomic energy" shall be construed to mean any equipment or device capable of making use of fissionable material or peculiarly adapted for making use of atomic energy and any important component part especially designed for such equipment or devices, as determined by the Commission.

(g) The term "facilities for the production of fissionable material" shall be construed to mean any equipment or device capable of such production and any important component part especially designed for such equipment or devices, as determined by the Commission.

**APPROPRIATIONS**

SEC. *19*. There are hereby authorized to be appropriated such sums as may be necessary and appropriate to carry out the provisions and purposes of this Act. The Acts appropriating such sums may appropriate specified portions thereof to be accounted for upon the certification of the Commission only. Funds appropriated to the Commission shall, if obligated by contract during the fiscal year for which appropriated, remain available for expenditure for four years following the expiration of the fiscal year for which appropriated. After such four-year period, the unexpended balances of appropriations shall be carried to the surplus fund and covered into the Treasury.

**SEPARABILITY OF PROVISIONS**

SEC. *20*. If any provision of this Act, or the application of such provision to persons or circumstances, is held invalid, the remainder of this Act or the application of such provision to persons or circumstances other than those as to which it is held invalid, shall not be affected thereby.

## SECOND ROCKY MOUNTAIN CONFERENCE

The Second Rocky Mountain Conference on Atomic Energy, sponsored by the Social Science Foundation of the University of Denver, was held at Estes Park, Colorado, on June 24-26.

Among the resolutions adopted, were the following:

Resolved that the Conference:

favors the principle of large-scale international exchanges of students, educators, scientists, businessmen, laborers and representatives from other fields of work as an effective means for bettering world understanding and mutual security.

recommends to the scientists to be assembled at the invitation of the British Association of Atomic Scientists, that they develop plans for enlightening the population of the world on the full significance of atomic energy, including both its military and peaceful uses; also that they take steps to form an international association of atomic scientists in all the United Nations.

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## CORRECTION

In the July 1st issue of the Bulletin we reprinted a brief AP story about the Empire Scientific Conference of the Royal Society of London.

This account, we now learn, is completely misleading. We are indebted to Prof. A. V. Hill, Sec'y of the Royal Society, for calling our attention to the error. Prof. Hill writes:

"The reason for holding the first few meetings of the Empire Scientific Conference in private was simply to allow a frank and free discussion of the scientific organizations and facilities, official and unofficial, in the various countries participating. The delegates could not possibly have discussed the scientific "set-up" in their own and other countries in the same critical, open and friendly way had every remark been liable to publication in the Press, with subsequent misunderstanding and misrepresentation. Anyone who has had any experience of public affairs will know that to have opened those discussions to the general public would have been to make them purely formal and therefore sterile."

"There was never any intention that the scientific proceedings of the Conference should be held in secret, nor were any such proceedings so held. At the President's own suggestion the Conference agreed that after the early intimate discussions on organization the proceedings should be thrown open. The statement that 'The delegates have expressed strong feelings that the situation should never have arisen' is quite untrue. I was present throughout the meetings and never heard any such expression from any delegate."

# The Bikini Tests–Radiological Effects . . .

We present below the significant conclusions concerning the Bikini tests given in two reports to Pres. Truman: the first excerpt is from the report of the President's Civilian Evaluation Commission; the second from the report of the Army-Navy Joint Chiefs of Staff.

I

We believe that interesting distinctions between the general results of the two explosions can even now be drawn without the risk of serious error. Both explosions sank several ships. From the limited observation we have thus far been able to make, the ships remaining afloat within the damage area appear to have been more seriously damaged by the aerial explosion than by the submarine explosion. The damage to ships in the first test might have been far greater if the bomb had exploded directly over the target ship, the Nevada.

**Radioactivity Compared**

In the first test much of the personnel within the ships would have received fatal doses of neutrons and gamma rays from the first deadly flash. On the other hand, the deadly effects of persistent radioactivity would have been much more severe in the second test. Had the target array been manned, it seems clear that casualties and both physical and psychological injury to personnel would have been very great. Rescue and attention to casualties would be difficult and dangerous. Within 2,000 yards of the explosion, ships would probably have been inoperative and a lapse of weeks might well ensue before relatively undamaged ships could again be used in combat.

The second bomb caused a deluge of water loaded with deadly radioactive elements over an area that embraced 90 per cent of the target array. All but a few of the target ships were drenched with radioactive sea water, and all within the zone of evident damage are still unsafe to board. It is estimated that the radioactivity dispersed in the water was the equivalent to that from many hundred tons of radium. Such results might be as disastrous to the fleet as the results of the first test, although in part for different reasons. An enemy possessed of two or more bombs might well so dispose them as to create simultaneously the deadly features of both tests. Such tactics might effectively dispose of a fleet for many months; for example, consider a Pearl Harbor attack on these lines.

**Conclusion**

As was demonstrated by the terrible havoc wrought at Hiroshima and Nagasaki, the Bikini tests strongly indicate that future wars employing atomic bombs may well destroy nations and change present standards of civilization. To us who have witnessed the devastating effects of these tests, it is evident that if there is to be any security or safety in the world, war must be eliminated as a means of settling differences among nations.

The Civilian Evaluation Commission consisted of Senator Hatch, chairman; Senator Saltonstall; Representatives Holifield and Andrews; Dr. Edward U. Condon, Dr. Karl T. Compton, Bradley Dewey, William S. Newell, and Fred Searls.

II

It is now possible to make some estimate of the radiological injuries which crews would have suffered had they been aboard Test A target vessels. Measurements of radiation intensity and a study of animals exposed in ships show that the initial flash of principal lethal radiations, which are gamma rays and neutrons, would have killed almost all personnel normally stationed aboard the ships centered around the air burst and many others at greater distances . . . It is clear that vessels within a mile of an atomic bomb air burst would eventually become inoperative due to crew casualties.

* * *

In the case of the underwater explosion, the air-burst wave was far less intense and there was no heat wave of significance. Moreover, because of the absorption of neutrons and gamma rays by water, the lethal quality of the first flash of radiation was not of high order. But the second bomb threw large masses of highly radioactive water onto the decks and into the hulls of vessels. These contaminated ships became radioactive stoves and would have burned all living things aboard them with invisible and painless but deadly radiation.

It is too soon to attempt an analysis of all of the implications of the Bikini tests. But it is not too soon to point to the necessity for immediate and intensive research into several unique problems posed by the atomic bomb. The poisoning of large volumes of water presents such a problem. Study must be given to procedures for protecting not only ships' crews but also the populations of cities against such radiological effects as were demonstrated in Bikini Lagoon.

The Army-Navy Joint Chiefs of Staff consisted of K. T. Compton, chairman; L. H. Brereton, B. Dewey, T. F. Ferrell, J. H. Hoover, R. A. Ofstie, J. H. Stillwell.

## COMMITTEE FOR FOREIGN CORRESPONDENCE

Through its Committee for Foreign Correspondence, the Federation of American Scientists is undertaking to establish direct contact by mail between scientists in this country and those in all parts of the world.

The Committee, in explaining the purpose of the program, states:

"People of other nations, and particularly the scientists, must surely find much in the atomic energy policy of the United States which is disturbing to them. The present lack of mutual understanding on this question may dangerously strengthen national isolationism at a time when world peace and security depend upon a rapid extension of international cooperation. Therefore the most important part of this correspondence program is the sending of published material which will reflect the thinking and feeling of American scientists. In this way we can convince scientists of other nations that their colleagues in America have joined forces to promote international cooperation and that they are determined in particular to avoid an atomic armament race.

"The mechanism of the correspondence is as follows: To every known foreign scientist will be sent a personal letter written at the request of the committee by the person who knows the scientist best. Each personal letter will be accompanied by a wide selection of non-technical bulletins, statements, and speeches, dealing with the social implications of atomic energy. In addition to such material republished by the Federation, such documents as "One World or None", The Atomic Development Report, the Baruch proposal, and the Russian proposal will also be included. (Issues of the Bulletin which contain such documents will be sent by the Committee.)

"Individuals are urged to give their much needed help by: (1) Sending to the Committee, preferably on the standard questionnaire form, a list of foreign scientists to whom they would be willing to write. Questionnaires can be obtained by sending a postcard to the Committee. (2) Sending to the Committee the names and addresses of American friends who know foreign scientists. (3) Sending contributions for the support of the Committee's work."

The Chairman of the Committee is A. S. Bishop; the treasurer, Oliver Johnson. Letters should be addressed to Committee for Foreign Correspondence, Box 615, Berkeley, California.

# The Road to Security . . .

## . . . William Higinbotham

I can think of no meeting I would rather attend on the anniversary of the Alamogordo test shot, than this Institute on World Control of Atomic Energy.[1]

A year ago today I attended that other meeting—the gathering of scientists and military men in the New Mexico dawn. We all felt very lonely there, very special, very remote. With the world what it is and human nature what it is, we were afraid we might be bringing into being forces which the world might never master. So it is with heartfelt sentiments that I speak for my fellow scientists to welcome you here.

What is the basic message of the scientists, which brought us out of our laboratories and universities, into the political arena, which led some of us to become advisors to senate committees, to work with diplomats in the State Department and in the councils of the United Nations?

It is that the bomb is powerful enough and cheap enough to destroy the cities of the world. Furthermore, there is no foreseeable defense to stop atomic bombs and certain other weapons of mass destruction —weapons which in future wars could in a single night do as much damage to Europe's capitals as was done in six years of the last war.

Against such appalling facts the world cries out in wishful thinking for some easy solution. But we scientists add another basic fact to be considered in the problem, and that is that America has no lasting monopoly of atomic bomb production. In four years other powers can have these bombs! Then the average man in the street will not be discussing what a bomb can do to a naval fleet, but what an atomic bomb can do to him, and to his house and to his city.

### THE TWO PATHS—WORLD CONTROL OR NATIONAL DEFENSE

It seems to me from this first year of confusion, a year in which we hesitated between one course or another, that American policy must soon turn decisively down one of two roads.

There seem to be only two courses offering even partial hopes of security for America in the Atomic Age.

1. We shall ardently seek and secure a system of world cooperation under law, or

2. We must retreat as a nation into a policy of defense and decentralization.

The choice of the scientists is given by Professor Einstein: "Rifle bullets kill men, but atomic bombs kill cities. A tank is a defense against a bullet, but there is no defense in science against the weapon which can destroy civilization. Our defense is not in armaments, nor in science, nor in going underground. Our defense is in law and order."

Today, to the word of the atomic scientists has been added the word of many others including military men themselves. According to a story by two well-known writers in the Saturday Evening Post, the experts of the War Department General Staff share this realistic conclusion.

### MILITARY MEN SEE NO SECURITY IN ARMAMENTS

Joseph and Stewart Alsop, Washington commentators, write the amazing story of a top War Department board of experts assigned to study the implications of atomic energy. Their final conclusion was summed up in one statement, "The only sure defense of this country is now the political defense." This is one revolution in human thinking already brought about by the irresistible forces of the Atomic Age. The best professional soldiers now admit that adequate armed forces and military preparations, however well-equipped and lavishly financed, can not provide security for such a large and powerful nation as the United States. **"The only sure defense of this country is now the political defense."**

The War Department Report also discusses the possibility of dispersing our cities, of placing wartime industries underground or in caverns like Mammoth Cave. This Report is not made public. However, there is made public from the White House another War Department report which does discuss these same questions of the road we must take if we do not prove successful upon the road to world cooperation and control.

I think it is sensible realism to discuss now the questions which must be raised if attempts to secure world control fail. Furthermore, I believe this realism will show us that ideas of world cooperation which used to be considered idealism are now the coldest realism.

If we do not have political and technical controls against nations of the world making bombs, we could have the largest Army, the largest air force and the largest naval fleets in the world and still not protect our cities against atomic attack.

### REPORT OF THE STRATEGIC BOMBING SURVEY

This is exactly what is now stated in the official report of the United States Strategic Bombing Survey issued from the White House just two weeks ago. The average man was preoccupied that week end with the termination of OPA or the Bikini test but the study made by the Strategic Bombing Survey of the damage to Hiroshima and Nagasaki may ultimately mean even more to him than the removal or maintenance of price controls.

This Report admits that in any case no defense could prevent appalling damage to our cities, but suggests measures which would permit the nation to continue fighting after that first terrible surprise destruction. To this end, the report speaks of 'dispersal, concealment, protection, and constant readiness of....forces...."

The Report states, "Though a re-shaping and partial dispersal of the national centers of activity are drastic and difficult measures, they represent a social and military ideal toward which very practical steps can be taken once the policy has been laid down."

The Report also suggests that "a national civilian-defense organization can prepare now the plans for necessary steps in case of crisis."

These are not the words of an hysterical fear-monger. This is the considered opinion of War Department experts making a survey for the guidance of the Secretary of War and the President of the United States.

Besides the civilian-defense organization, an unheard of proposal for times of peace, the Report continues, "two complementary programs which should be worked out in advance are those for evacuation of unnecessary inhabitants from threatened urban areas, and for rapid erection of adequate shelters for people who must remain."

This prospect of running for cover and burrowing like moles is so fantastic as to seem almost unbelievable. But it has been repeatedly discussed in private and in the **Bulletin of the Atomic Scientists.**[2] It was well brought out in the testimony of scientists before the Senate committee—but last December the public's attention was on the inquiry into Pearl Harbor and not on the prospects of a future Pearl Harbor. Again it must be discussed today as a background to a sincere and impassioned effort to bring the world to an understanding of atomic issues.

Particularly must we appreciate what such mass movements of population would mean to the free American way of life. They could not be accomplished without regimentation and discipline such as Americans have never yet tolerated.

Our defensive frontiers are gone. So, when this Report speaks of evacuation of citizens from "threatened urban areas" they are speaking of **every major city in the United States.** The "threat" will exist and will seem very real when other countries have the bomb—and the consensus of scientists places that time as about five years after the publication of the Smyth Report. The last hours of the the first year are slipping away. Four years is little

[1] From a speech before the Institute on World Control of Atomic Energy sponsored by the Committee on Atomic Information and held on July 15 and 16 in Washington, D.C.

[2] For instance, "Dispersal of Cities and Industries" by J. Marshak, E. Teller and L. Klein in **Bulletin** v. 1, No. 9.

time to plan any such civilian evacuations.

There is no sane way of estimating the cost of such a project, for it would mean relocation of industry and disruption of our economy boyond imagination. But we had better begin to evaluate the cost. And our government owes it to its people, having brought this bomb into existence, to make clear just what it means.

### ARMS RACE WILL MAGNIFY FEARS

Do our government officials realize the psychological factors involved? One may dismiss as the fears of nervous people those who are now going to fortune tellers—and, according to Newsweek Magazine, asking 'Where can I go to be safe?' Perhaps one may dismiss the opinion of the economist Roger Babson, a man who makes his living out of studying economic trends, who is alarmed about the future of our cities, and actually now recommends investments based on property in rural areas. Perhaps one can dismiss the gloomy potentialities discussed in his newsletter for businessmen, "Atomic Service." But who can dismiss the testimony of General Arnold that the world must give up war? Who can ignore the bill recently introduced in Congress to completely replace the government should its members be destroyed overnight? What diplomat doubts Cordell Hull's statement that peace is now as essential to civilization as air is to individual life? And what military commentator dares to question the cold-blooded recommendation of this latest Report from the White House?

As an atomic scientist I watched the growing fears of scientists through the years of darkness, when the rest of the world did not know of this coming peril. I know that the longer we lived with this problem the more alarmed we become. In this case, familiarity does not breed contempt. It breeds respects

The men who calmly watched the Bikini tests, changed their minds when they came close to the heart of the explosion. As men come ever closer to the heart of this problem they will share the scientists' respect for the atomic bomb. So if our international course continues along the path of an atomic arms race, we shall see a war of nerves such as history does not record. Unless we succeed in establishing world control, government officials must plan defense and decentralization measures beyond description. I have no hesitation in predicting that if they do not, in a few years metropolitan real estate values will topple, as the average man realizes the disadvantages of living in exposed cities in an Atomic Age without world law.

When one considers carefully this dark road to insecurity, the road to international cooperation does not seem so dark and forbidding as before. The basic step is not to start with thinking in terms of international relations in the past. The League of Nations is gone but the world of the League of Nations is also gone. Instead of staring at the end—which is international cooperation and diplomacy, I believe we will be more successful if we start with the problem. Then we do not ask **what can be done** with existing machinery and the traditions and rivalries inherited from the past, from the pre-atomic era. We must start with atomic energy, and consider, not what would be desirable or easy of achievement or acceptable . . ., we start with the facts, and we follow the facts. In that case, I think we and the other nations of the world will find that their conclusions will consider not what might be done, but **what must be done.** The bomb has caused many controversies. But essentially the issues of atomic energy are the least controversial issues in the world. In the details will be endless conflicts. But they can be worked out if one looks at the clear alternatives with a clear mind.

### BATTLE FOR BILL A HEARTENING LESSON

The May-Johnson Bill for control of atomic energy started at the wrong end —not with the beginnings of the problem, but with the circumstances then prevailing. The Senate, however, created a special committee at the suggestion of Senator McMahon, which decided to begin with the atom and devote itself to a thorough study of the problem in order to draft the best possible legislation.

They began with all the competent authorities on the scientific and political implications. They finished with volumes of testimony. Even today the full story of atomic energy is told in this testimony as nowhere else except in the secret archives of the Manhattan District Project. When they reported out the Bill, they sent with it a book which concisely gives the story behind the bill. It is an amazing thing to come from a group of senators. If the scientists have tried to learn something about politics, certainly they must pay great credit to those politicians who have honestly tried to learn something of science.

The McMahon Bill is a good bill, and endorsed by scientists although there are some things in it which we think could be improved. But we are told that judged by legislative standards it is not merely good, it is a miracle. We will have many such miracles as men become familiar with the necessities of our situation.

In the field of world control, the most hopeful single step in the first year was the publication of the Acheson-Lilienthal Report. It is particularly significant because of the way in which the five men composing the Lilienthal committee approached their problem. They were five men of different backgrounds and experience who had never worked together before. A government official, a physics professor, a chemist, and two industrialists. But they realized from the start the importance of the job they had to do and the revolutionary character of the thinking before them. Instead of immediately starting with airing their opinions, they d e c i d e d **first to study the subject of committees.** They studied the technique of committee work because they thought it important to understand why committees so often fail.

Now today in the United Nations we are seeing the clash of personalities and preconceived ideas. But if there is one message in our atomic problems which is quite clear, it is that this is a question beyond old ideas and preconceptions, **a question far above personalities and even above nations.** The staggering complexity of the problem of the State Department Board of consultants is the problem of the whole world. We shall fail in the United Nations if we do not keep our minds devoted to the central facts and the main issues. But I can not believe that the whole world and all the peoples of the world can not be brought to the same conclusions if they are given the proper facts to consider.

We are in a revolution even more far-reaching than the Industrial Revolution of the early nineteenth century, and it is not possible to determine policy according to established political precepts, nor is it possible to wait and hope that a policy will form itself. We do not have that much time given to us.

Today the atomic arms race is already well underway. This is officially admitted in the report of the State Department Board of Consultants. And daily the newspapers carry stories of yet more deadly weapons being brought to perfection, of missiles travelling faster than sound, of rockets piercing the stratosphere.

International maneuvering to control sources of raw materials for bombs is hidden from view but we may be sure that behind the scenes the search for uranium is being carried out on a scale surpassing that of the Gold Rush of '49. All nations realize there is no substitute for uranium.

To scientists, it is plain that the first object of the United Nations Atomic Energy Commission must be to stop the atomic arms race before it is too late. Only then will we be able to go about solving the other major problems.

But if fear beyond description grips the world, it will be impossible for peoples or nations to act with reason.

# The Atomic Bomb and Our Cities . . . .

## . . . . from Report of U.S. Strategic Bombing Survey

### A. THE DANGER

The Survey's investigators, as they proceeded about their study, found an insistent question framing itself in their minds: "What if the target for the bomb had been an American city?" True, the primary mission of the Survey was to ascertain the facts just summarized. But conclusions as to the meaning of those facts, for citizens of the United States, forced themselves almost inescapably on the men who examined thoughtfully the remains of Hiroshima and Nagasaki. These conclusions have a different sort of validity from the measurable and ponderable facts of preceding sections, and therefore they are presented separately. They are not the least important part of this report, however, and they are stated with no less conviction.

No two cities, whether in Japan or the United States, are exactly alike. But the differences in terrain, layout and zoning, density, and type of construction can be allowed for one by one; when that is done, comparisons become possible. The most striking difference between American and Japanese cities is in the residential districts: What happened to typical Japanese homes is not directly applicable to American residential districts. But in Japanese cities were many brick and wood-frame buildings of Western or similar design and of good workmanship. It was the opinion of the Survey's engineers, with their professional familiarity with American buildings, that these Japanese buildings reacted to the bomb much as typical American buildings would have. And these buildings were exceedingly vulnerable: Multistory brick buildings with load-bearing walls were destroyed or seriously damaged over an area of 3.6 square miles at Hiroshima, while similar one-story brick buildings were destroyed or seriously damaged within an area of six square miles. Wood-frame buildings built as industrial or commercial shops suffered similar damage in an area of over eight miles, while Japanese residences were destroyed or seriously damaged within an area of six square miles. That was at Hiroshima, where the less powerful bomb was used.

These figures indicate what would happen to typical wood, brick, and stucco structures in American cities. Modern reinforced concrete and steel-frame buildings would fare better here—as they did in Japan. But the following table shows how American cities are built, and how few are of blast-resistant construction.

TYPES of STRUCTURES by EXTERIOR MATERIAL
(U. S. CITIES)

| City | Total Structures Reported | Wood | Brick | Stucco | Other No. | Other % |
|---|---|---|---|---|---|---|
| New York | 591,319 | 236,879 | 229,482 | 41,661 | 13,297 | 2.2 |
| Washington | 156,359 | 48,971 | 95,939 | 5,764 | 5,685 | 3.5 |
| Chicago | 382,628 | 131,148 | 238,959 | 5,797 | 6,724 | 1.7 |
| Detroit | 267,677 | 165,488 | 94,333 | 1,923 | 5,933 | 2.2 |
| San Francisco | 105,180 | 61,172 | 2,334 | 40,902 | 722 | 07. |

Source: 16th census of U.S. (1940) Vol. II

The overwheming bulk of the buildings in American cities could not stand up against an atomic bomb bursting a mile or a mile and a half from them.

And the people? We must not too readily discount the casualty rate because of the teeming populations of congested Japanese cities. American cities too have their crowded slums, and in addition tend to build vertically so that the density of the population is high in a given area even though each apartment dweller may have more living-space than his Japanese equivalent.

POPULATION DENSITIES
U. S. AND JAPANESE CITIES

| City | Population | Area Sq. Mi. | Pop. Density per Sq. Mi. |
|---|---|---|---|
| New York | 7,492,000 | 322.8 | 23,200 |
| Manhattan (day) | 3,200,000 | 22.2 | 145,000 |
| Manhattan (night) | 1,689,000 | 22.2 | 76,000 |
| Bronx | 1,493,700 | 41.4 | 34,000 |
| Brooklyn | 2,792,600 | 80.9 | 34,200 |
| Queens | 1,340,500 | 121.1 | 11,000 |
| Staten Island | 176,200 | 57.2 | 3,000 |
| Washington | 663,091 | 61.4 | 11,000 |
| Chicago | 3,396,808 | 206.7 | 16,500 |
| Detroit | 1,623,452 | 137.9 | 11,750 |
| San Francisco | 634,536 | 44.6 | 14,250 |
| Hiroshima | 340,000 (prewar) | 26.5 | 12,750 |
| center of city | 184,000 (1 Aug. 45) | 4.0 | 46,000 |
| Nagasaki | 250,000 (prewar) | 34 | 7,000 |
| Built-up area | 220,000 (1 Aug. 45) | 3.4 | 65,000 |

Sources. New York: Fortune, July, 1939—other U.S. cities: 16th census of U.S. (1940)

Most of the population densities in this table are merely averages for people within a city limits. Most meaningful, therefore, are the figures for the central areas of Hiroshima and Nagasaki, and for the boroughs of New York. The casualty rates at Hiroshima and Nagasaki, applied to the mased inhabitants of Manhattan, Brooklyn, and the Bronx, yield a grim conclusion. These casualty rates, it must never be forgotten, result from the first atomic bombs to be used and from bombs burst at considerable distances above the ground. Improved bombs, perhaps detonated more effectively, may well prove still more deadly.

### B. WHAT WE CAN DO ABOUT IT

The danger is real—of that, the Survey's findings leave no doubt. Scattered through those findings, at the same time, are the clues to the measures that can be taken to cut down potential losses of lives and property. These measures must be taken or initiated now, if their cost is not to be prohibitive. But if a policy is laid down, well in advance of any crisis, it will enable timely decentralization of industrial and medical facilities, construction or blueprinting of shelers, and preparation for life-saving evacuation programs. The almost unprotected, completely surprised cities of Japan suffered maximum losses from atomic-bomb attack. If we recognize in advance the possible danger and act to forestall it, we shall, at worst, suffer minimum casualties and disruption.

Since modern science can be marshalled for the defense as well as the attack, there is reason to hope that protective weapons and techniques wil be improved. Even protective devices and vigilance, however, cannot be perfect guards against surprise or initial attack, or against the unlimited choices of targets offered an enemy through the range and speed of modern weapons. In our planning for the future, if we are realistic, we will prepare to minimize the destructiveness of such attacks, and so organize the economic and administrative life of the nation that no single or small group of successful attacks can paralyze the national organism.

#### 1. Shelters

The most instructive fact at Nagasaki was the survival, even when near ground zero, of the few hundred people who were properly placed in the tunnel shelters. Carefully built shelters, though unoccupied, stood up well in both cities. Without question, shelters can protect those who get to them against anything but a direct hit. Adequate warning will assure that a maximum number get to shelters.

Analysis of the protection of survivors within a few hundred feet of ground zero shows that even gamma rays can be shielded against. At Hiroshima, for example, persons in a concrete building 3,600 feet from ground zero showed no clinical effects from gamma radiation, but those protected only by wooden buildings at a similar distance suffered from radiation disease. The necessary thickness varies with the substance and with the distance from the point of detonation.

Men arriving at Hiroshima and Nagasaki have been constantly impressed by the shells of reinforced concrete buildings

This article is from the fourth and last section of the Survey's Report. The complete text of the Report appears in the July 5th issue of "The United States News."

still rising above the rubble of brick and stone or the ashes of wooden buildings. In most cases gutted by fire or stripped of partitions and interior trim, these buildings have a double lesson for us. They show, first, that it is possible without excessive expense to erect buildings which will satisfactorily protect their contents at distances of about 2,000 feet or more from a bomb of the types so far employed. Construction of such buildings would be similar to earthquake-resistant construction, which California experience indicates would cost about 10 per cent to 15 per cent more than conventional construction. Even against more powerful bombs or against near misses such construction would diminish damage. Second, the internal damage illustrates the danger from interior details and construction which result in fire or flying debris in otherwise sound buildings. The elimination of combustible interiors and the provision of full-masonry partition walls, fire-resistive stair and elevator enclosures, and fire-division walls would localize fires. Avoidance of glass, tile, or lath and plaster on wood stud would cut down damage from flying debris.

The survival of sheltered sections of Nagasaki suggests forcefully the use that can be made of irregular terrain. Uneven ground reduces the spread and uniformity of blast effect. Terrain features such as rivers and parks afford natural firebreaks and avenues of escape.

**2. Decentralization**

Hiroshima and Nagasaki were chosen as targets because of their concentration of activities and population. The population density of 45,000 or more per square mile of built-up area explains in part the high casualty rate. Significant, therefore, is the fact that deaths at Nagasaki, despite the greater population density, were only half those at Hiroshima: The difference can be assigned in the main to the separation of the dispersed built-up pockets at Nagasaki, in contrast to the uniform concentration of the inhabitants in the heart of Hiroshima. The Nagasaki bomb thus dissipated much of its energy against hills, water, or unoccupied areas, while the Hiroshima bomb achieved almost optimum effect.

The fate of industries in both cities again illustrates the value of decentralization. All major factories in Hiroshima were on the periphery of the city—and escaped serious damage; at Nagasaki, plants and dockyards at the southern end of the city were nearly intact, but those in the valley where the bomb exploded were seriously damaged. So spread out were the industries in both cities that no single bomb could have been significantly more effective than the two actually dropped.

Medical facilities, crowded into the heart of the city rather than evenly spread through it, were crippled or wiped out by the explosion. Only the previous removal of some stocks of medical supplies from Hiroshima to outlying communities, and the bringing in of aid, enabled the limited medical attention of the first few days.

The similar peril of American cities and the extent to which wise zoning has diminished it differ from city to city. Though a reshaping and partial dispersal of the national centers of activity are drastic and difficult measures, they represent a social and military ideal toward which very practical steps can be taken once the policy has been laid down. In the location of plants, administrative headquarters, and hospitals, particularly, the value of decentralization is obvious, and can be obtained cheaply if the need is foreseen.

Reserve stocks of critical materials and of such products as medical supplies should be kept on hand. This principle of maintaining reserves applies also to the capital equipment of the country. Key producing areas must not be served by a single source of power or channel of transportation. Indispensable materials must not come from processing plants of barely adequate capacity. Production of essential manufactured goods—civilian and military—must not be confined to a few or to geographically centralized plants. And the various regions of the country should be encouraged to approach balanced economic development as closely as it is naturally possible. An enemy viewing our national economy must not find bottlenecks which use of the atomic bomb could choke off to throttle our productive capacity.

**3. Civilian Defense**

Because the scale of disaster would be certain to overwhelm the locality in which it occurs, mutual assistance organized on a national level is essential. Such national organization is by no means inconsistent with decentralization; indeed, it will be aided by the existence of the maximum number of nearly self-sustaining regions whose joint support it can co-ordinate. In addition, highly trained mobile units skilled in and equipped for fire fighting, rescue work, and clearance and repair should be trained for an emergency which disrupts local organization and exceeds its capability for control.

Most important, a national civilian-defense organization can prepare now the plans for necessary steps in case of crisis. Two complementary programs which should be worked out in advance are those for evacuation of unnecessary inhabitants from threatened urban areas, and for rapid erection of adequate shelters for people who must remain.

**4. Active Defense**

Protective measures can substantially reduce the degree of devastation from an atomic bomb and the rate of casualties. Yet if the possibility of atomic attack on us is accepted, we must accept also the fact that no defensive measures alone can long protect us. At best they can minimize our losses and preserve the functioning of the national community through inital or continuing partial attack. Against full and sustained attacks they would be ineffectual palliatives.

As defense weapons, atomic bombs are useful primarily as warnings, as threats of retaliation which will restrain a potential aggressor from their use as from the use of poison gas or biological warfare. The mission of active defense, as of passive defense, is thus to prevent the surprise use of the atomic bomb from being decisive. A wise military establishment will make sure—by dispersal, concealment, protection, and constant readiness of its forces—that no single blow or series of blows from an enemy can cripple its ability to strike back in the same way or to repel accompanying attacks from other air, ground, or sea forces. The measures to enable this unrelaxing state of readiness are not new; only their urgency is increased. Particularly is this true of the intelligence activities on which informed decisions and timely actions depend.

The need for research is not limited to atomic energy itself, but is equally important in propellants, detection devices, and other techniques of countering and of delivering atomic weapons. Also imperative is the testing of the weapon's potentialities under varying conditions.

**Conclusion**

One further measure of safety must accompany the others. To avoid destruction, the surest way is to avoid war. This was the Survey's recommendation after viewing the rubble of German cities, and it holds equally true whether one remembers the ashes of Hiroshima or considers the vulnerability of American cities.

Our national policy has consistently had as one of its basic principles the maintenance of peace. Based on our ideals of justice and of peaceful development of our resources, this disinterested policy has been reinforced by our clear lack of anything to gain from war—even in victory. No more forceful arguments for peace and for the international machinery of peace than the sight of the devastation of Hiroshima and Nagasaki have ever been devised. As the developer and exploiter of this ominous weapon, our nation has a responsibility, which no American should shirk, to lead in establishing and implementing the international guarantees and controls which will prevent its future use.

# UN Atomic Energy Commission

. . . cont. from p. 12

## Disarmament Pacts of the Past . . Dr. Van Kleffens

The essence of the Soviet proposal seems to be, if I am not mistaken, to prohibit the production and use of atomic weapons, without there being put into force simultaneously an effective system of international inspection, or of sanctions unless such sanctions were approved by the Security Council with an affirmative vote of all the permanent members, a possibility which to me seems remote. Now the prohibition of atomic weapons is, I think we are all agreed, entirely sound in principle. But the question is whether, in order to be effective, that principle should simultaneously be properly implemented by a system of controls, or whether we can dispense with such controls. The Soviet representative has drawn our attention to past cases of prohibition of certain weapons. I want to recall that history shows that simple prohibition of weapons, without simultaneous proper implementation, does not look very promising for those who really want to rule out the use of atomic weapons.

This method of simply forbidding weapons without more ado has been tried for centuries. In the old days, it was considered unlawful, f.i., to poison wells; nevertheless cases are on record in which this unlawful means of warfare was resorted to.

Let me now recall some formal prohibitions of modern times, consigned in solemn treaty form, of various kinds of weapons, and let us then see what became of them.

1) First in the series there is the declaration made in the City which then was called St. Petersburg on December 11, 1868, prohibiting projectiles weighing less than 400 grams which either are explosive or contain incendiary or explosive material.

We all know what measures of success this solemn promise had in aerial and other forms of warfare.

2) The declaration signed at the first Peace Conference at the Hague in 1899 prohibiting the use of cartridges which expand in the human body or flatten, the so-called dum-dum bullets. As is well known, it has been charged repeatedly that in spite of this declaration such cartridges were used, and there are many cases on record in which such cartridges were actually used, not in the sense that these had been issued by the military authorities, but in the sense that individual soldiers had sawed off or cut off the top of regulation cartridges in order to increase their harmful effect.

3) At the same Peace Conference of 1899, many states bound themselves for 5 years to refrain from throwing projectiles and explosives from balloons. This declaration was renewed at the second Peace Conference in 1907, but few countries ratified it, the United States and the United Kingdom being the only great powers who did so. Since the declaration was only to be valued if all powers ratified it, its effect was very slight, and we see here again how futile such promises are unless they are backed up by proper implementation and organisation.

4) The regulations on warfare on land adopted by the Hague Peace Conference of 1899 and 1907 issued the prohibition to use poisoned weapons. When we now know about the existence of highly poisonous gases intended for use in war, we can measure how much respect this prohibition inspired.

5) The first Hague Peace Conference also expressly prohibited the use of suffocating or poisonous gases, a prohibition proposed by Russia. We know what came of it. Everywhere there was a total lack of confidence that this frightful means of warfare would not be employed. The effect of the Treaty made at the Washington Disarmament Conference of 1922 forbidding the use of suffocating, toxic or similar gases and other materials, had no effect whatsoever, the treaty being ratified by no one.

I purposely limit myself to acts having the force of an international convention, and leave aside the many attempts to prohibit dangerous weapons which came to nothing. There is one more important matter in this connection, and that is the numerous attempts to prohibit the use of mines in warfare at sea, which, however solemnly proclaimed at the Hague Peace Conferences of 1899 and 1907, never were a success, no more than attempts to prohibit the use of submarines. The attempt made in 1930 at the London Naval Conference to make the observance of certain rules obligatory with regard to using submarines resulted in a treaty, but it had little practical effect.

I think, Mr. Chairman, that I have succeeded in showing that simple prohibitions of the most diverse kinds of weapons have yielded very little, if anything in the way of practical results. I am therefore inclined to think that there is little reason to expect that the mere prohibition of atomic weapons would have better results. Rather do I feel that the contrary is probable, for the simple reason that the atomic weapon has such a vast destructive effect that there will be a strong incentive to nations to run no risk of being annihilated first, and rather use this weapon before some other state does it.

I must therefore conclude that the Russian proposal, although quite sound in principle, needs considerable elaboration if it is to have practical effect, notably in this sense that, precisely because we are concerned here with atomic weapons, we must try to devise a system of international controls, international inspection and effective sanctions, and I believe that such a system is possible on the basis of the American suggestions.

One more point, Mr. Chairman. It seems to me, moreover, that the adoption of international controls and sanctions, provided they are voluntarily accepted, can never be held to be incompatible with the sovereignty of any state. Every state limits its sovereignty everyday by the voluntary conclusion of international conventions, without ceasing to remain, fundamentally, a sovereign state. Sometimes such conventions restrict the unfettered liberty of such sovereign states very considerably, but never is the sovereignty of those states thereby done away with or even impaired in principle.

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### THE BRITISH ATOMIC SCIENTISTS ASSOCIATION

The atomic scientists of Great Britain formed an organization, called the Atomic Scientists Association, at a meeting held in London on March 8. The members comprise the principal participants in the British Atomic Energy Project.

The officers of the Association are: Prof. Mott, President; Profs. Peierls and Pryce, Executive Vice Presidents; Prof. Moon, General Secretary.

The members of the Council are: Dr. Arrol, Prof. Blackett, Dr. Burhop, Dr. Kurti, Mr. Marley, Prof. Massey, Prof. Mott, Prof. Oliphant, Prof. Peierls, Dr. Pickavance, Dr. Rotblat, Prof. Skinner.

Some of the activities of the Association have been: (a) Preparation of a Memorandum to the UN Atomic Energy Committee (published in **Bulletin** v. 1 No. 12), (b) Critical study of the British Atomic Energy Bill, (c) International Conference on Atomic Energy held at Oxford, July 29-31.

Delegates of the Federation of American Scientists attending the Oxford Conference were Profs. Herbert L. Anderson of the University of Chicago and Henry A. Boorse of Columbia University. A detailed report of the Conference will be published in the **Bulletin**.

# A Victory and An Impending Crisis . . . . cont. from p. 1

The atomic scientists are fully in favor of such a procedure. The establishment of an effective international Atomic Development Authority is a promising new approach to world peace and collaboration, a step by which atomic energy can be made a bond between nations instead of a threat estranging them. If it ever be necessary to enforce an atomic disarmament covenant, that would mean that this new approach to peace has failed, and the world has returned to its present status of unlimited national rivalry — whether with or without a legal veto, would make but little difference.

Unfortunately, the attempt to prevent the Atomic Energy Commission from getting entangled in the same type of controversies which have beclouded all the international discussions of the last years, has failed.

Most of the proceedings of the UN commission during July were devoted to the controversy over the relationship of the ADA to the Security Council—a discussion which has produced some interesting thinking on this subject, but has not helped to bring the opponents any closer.

On July 24, after evading a clear statement of attitude on the Baruch plan for over a month, Mr. Gromyko finally rejected it. Though he referred to "US Memorandum No. 3," which dealt with the position of the ADA in relation to other organs of the UN, the tenor of this speech made it clear that it implied the rejection of the ADA—plan as a whole. The French attempt to provide a compromise for the Russians by representing the ADA as a technical body subordinated to the Security Council obviously did not achieve its purpose.

* * *

When asked to present the Russian plan for implementation of the USSR-proposed convention for outlawing the the atomic bomb, he had nothing to contribute except to minimize the importance of control and inspection and to praise the principle of national sovereignty, in his words, "the cornerstone of the San Francisco charter." He insisted that mutual trust and unanimity of the "Big Three" provides the only possible and sufficient guarantee of an atomic disarmament pact.

The actual "making of bombs" is such a minor part of the procedure leading from raw materials to finished bombs, that United States could agree to Gromyko's request to stop assembling bombs and still retain practically all the advantages she has as far as atomic armaments are concerned—advantages which stem first from the possession of large plants producing fissionable materials and second, from the know-how of this production and of the bomb assembly. Whether an American renunciation of the "making of the bombs" —perhaps with a time limit of 6 months or a year—could be used at an appropriate moment as a gesture to create a favorable psychological world reaction is worth consideration; but such a "bomb-making holiday" would not give USSR or the world an iota of real security against atomic warfare.

In brief, Mr. Gromyko cannot be presumed not to know—or to expect others not to know—that the threat of a devastating atomic warfare lies in the unhampered production and accumulation of **atomic explosives** (plutonium and uranium 235) which can be converted into bombs on short order, once an effective design of the bomb is known.

The only way to prevent the threat to peace stemming from the accumulation of atomic explosives, is by placing the **control of all fissionable materials in an international agency**, as suggested in the Baruch plan, or else to **outlaw the fabrication of such materials together with that of bombs.** But the Russians do not wish either of these solutions. They want to retain the right to use atomic energy freely for non-military applications. This means unlimited and uncontrolled production of fissionable materials which are equally needed for bombs and for power plants. Therefore, the Russians cannot logically ask that the US discontinue the operation of U-235 plants at Oak Ridge and the plutonium plant at Hanford, or to refrain from building new plants.

This reduces the convention suggested by the Soviet government to a worthless piece of paper. Such a convention, **even if followed strictly by all its signatories** (which is more than one dares to hope), will **not** prevent all nations from accumulating the wherewithal of atomic bombs; the only hope that bombs will not be used if a war breaks out, will then reside in the promise of not doing so.

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### THE FIGHT MUST GO ON

The situation created by the Soviet unwillingness to enter into the discussion of control methods undoubtedly creates a danger of a stalemate in the UN Atomic Energy Commission. This deadlock must and we believe, can be avoided. The international situation today recalls the domestic situation last fall: who would have believed then, that nine months later, a far-reaching program of international control and cooperative development of atomic energy would be adopted as the official policy of the United States government?

The deliberations of the UN atomic energy commission must not be allowed to break down because of one nation's slowness in recognizing the revolutionary character of the situation and the necessity for a bold international solution. The Soviet government may not be easily accessible to the pressure of public opinion abroad; but its proclaimed basis is the belief in scientific diagnosis and approach to the solution of social problems. Russian scientific experts cannot help arriving at the same diagnosis of the situation as their American and British colleagues.

Discussion in the scientific and technical sub-committee of the UN Commission, which is now under way, will provide one opportunity for Russian scientific experts to become acquainted with the motives and attitudes of their colleagues. We hope that through this and other media the political leaders of the USSR will be made aware of the vital necessity for a radical international solution of the atomic energy problem. With such a solution recognized as the common interest of every country in the world—theirs as well as ours—the Soviet leaders may be less suspicious of the plans evolved by our scientists and political experts. They many end in realizing that these plans were devised in an honest desire to free *all* mankind from the threat of destruction in an atomic war, and not with the selfish intent of perpetuating the US lead in atomic armaments.

**Material in this Bulletin is released for publication at 12 noon, Sat., Aug. 10.**

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**The present issue constitutes a double number—Volume 2, Nos. 3 and 4.**

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**BULLETIN OF THE ATOMIC SCIENTISTS**

**EDITORS:**

**H. H. Goldsmith** **E. Rabinowitch**

The Bulletin is published twice a month by The Atomic Scientists of Chicago, 1126 E. 59 St., Chicago 37, Ill. Single copy—10c; subscription price—$1 for 6 months; $2 a year. Special rates for groups. Contributions toward defraying cost of publication are welcomed. Manuscripts should be sent to H. H. Goldsmith at the above address.